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THE FIRST EDITIONS OF SIR THOMAS BROWNE

By ELI MOSCHCOWITZ, M.D.

NEW YORK, N. Y.

IN 1634, Sir Thomas Browne, aged twenty-nine, returned from a continental tour and settled in Shipden Dale near Halifax. Here he wrote the "Religio Medici," "with such disadvantages" he says, "that from the first setting pen to paper I had not the assistance of any good book." The manuscript was finished in 1636. In 1637 he moved to Norwich, his future home. The presumption is strong that Browne did not appreciate the greatness of his work for he certainly made no move to publish it in the course of the next five years. In the meantime he must have shown it to his friends, for there are, according to Monro, seven or eight manuscripts of the "Religio" in existence, each slightly different. Only one, now in the Castle Museum, Norwich, is in Browne's handwriting. In 1642, two surreptitious editions of the "Religio" appeared, published by Andrew Crooke. One contains 190 pages, twenty-five lines to the page and no printed title page, but has the well-known engraving by William Marshall, a prominent contemporary engraver, representing a man falling from a rock into the sea, caught by a hand issuing from the clouds, with the motto, "A Coelo Salus." It contains nothing but text and is very rare. The other was also published by Crooke, contains 159 pages, twenty-six lines to the page, and has no title page but the same engraving by Marshall (Fig. 1) precedes it. According to Wilkin, this edition is more accurate and better printed and is probably the later of the two. It is important to remember that these editions are entirely anonymous and contain no preface. Whether Browne had any connivance in their publication one cannot say. In the prefaces to later editions he speaks as though he had been taken advantage of. He calls these early editions "broken and imperfect" and says that the transcribed text "had run forward to corruption." He speaks of "the addition of some things, omission of others and transposition of many." One cannot but believe, however, that Sir Thomas was not entirely guiltless. An author would hardly permit a publisher, accused of such offenses, to publish an authorized edition, differing but slightly from the pirated, in the following year.

The first two editions were received with some favor, but a curious accident gave the book and Browne sudden fame. Sir Kenelm Digby, that strange combination of pirate, philosopher, scientist and quack, had been arrested by Parliament and confined to Winchester House. Digby was a man of considerable importance in the kingdom and his views on religion were regarded with authority. His friend, the Earl of Dorset, recommended the "Religio" to Digby late one evening and Digby promptly sent his servant out to buy a copy. He was already in bed when it came. Writing the next morning to his friend, he says:

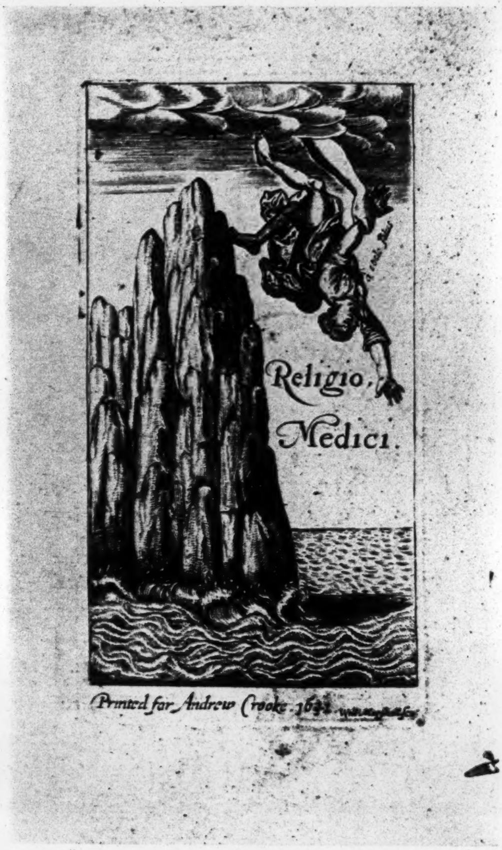


Fig. 1. Title Page of the Surreptitious Edition of the Religio Medici, 1642.

> This good-natured creature (Religio Medici) I could easily persuade to be my bedfellow, and to wake with me as long as I had any edge to entertain myself with the delights I sucked from so noble a conversation. And truly, my Lord, I closed not my eyes till I had enriched myself with or at least exactly surveyed, all the treasures that are lapped up in the folds of these few sheets.

This restless spirit in the heat of enthusiasm composed a lengthy criticism, larger than the "Religio" itself. The reading and the critique were both finished in less than twenty-four hours, a feat not entirely despicable. Digby did not know who the author was, but he probably communicated with the publisher Crooke, who informed Browne that the famous Catholic philosopher proposed to write a review of his book. This aroused Browne who promptly wrote a letter to the knight begging him to delay the publication of his essay until the authorized text was printed, which he promised shortly. Either the letter came too late or Digby was impatient, and the volume entitled "Observations Upon Religio Medici" was published in that year, 1642.

This incident is of more than fugitive interest. As Gosse points out, criticism had not become a part of literature until the time of Queen Anne, and authors until then had no means of evaluating the views of the public upon their works. This is one of the reasons why some of the finest writers of the Elizabethan and post-Elizabethan era sank into neglect for many decades, until the birth of criticism in the eighteenth century brought them to notice. Browne was peculiarly fortunate, therefore, in that he enjoyed contemporary criticism, and the consequence was that the "Religio" obtained a wide circulation.

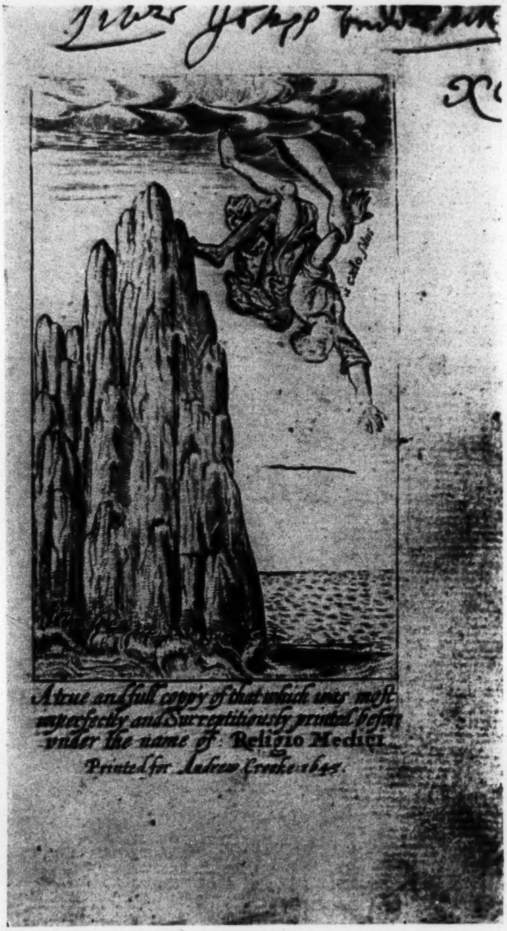
In 1643, the first authorized edition of the "Religio Medici" appeared. It contained the plate of Marshall's with the following words beneath: "A true and full coppy of that which was most imperfectly and surreptitiously printed before under the name of: *Religio Medici.*" The plate otherwise differs from that in the surreptitious printings in that the words "Religio Medici" are absent. This title plate appears in every edition published during Browne's lifetime. This third edition also contains Browne's letter to Digby, Digby's answer, a list of errata and a preface from Browne to the reader. It contains 183 pages.

The book immediately became popular. In 1644, John Merryweather, a Cambridge student, translated the "Religio" into Latin. He hawked his manuscript about through Holland and France looking for a publisher, finally finding one in Hackius of Leyden. The plate of Marshall is reversed in this edition. The book contains 242 pages. There is a short address by Merryweather, Browne's preface, three Latin poems and a sort of index. In an interesting letter to Browne written in 1649, Merryweather speaks of the difficulties he underwent in finding a publisher and the manner in which the book was received on the Continent.

The "Religio" met with acclaim on the Continent and edition upon edition followed. Apparently the book puzzled the literati profoundly. Salamasius, the literary despot of his period, to whom the manuscript was submitted for opinion by the printer who was Merryweather's first choice as publisher, told the translator that "it contained many things well said and also many exorbitant conceptions in religion and would probably cause much frowning entertainment, especially among the ministers." This opinion promptly froze the printer's enthusiasm. Others questioned Browne's orthodoxy and at various times he was called a Catholic, an Atheist and even a Quaker. The one person on the Continent who saw that Browne was an artist and not a theologian was a colleague of ours, Guy Patin, the distinguished professor of medicine of the Paris Faculty. He writes:

> The book is all quite nice and curious, but strongly delicate and mystic; the author does not lack spirit and it contains strange and ravishing thoughts . . . There is an agreeable melancholy in his thoughts, but who in my opinion is to seek for a master in religion, and perhaps in the end, find none.

Patin esteemed Browne highly and in 1664 spoke feelingly of him to Edward Browne, Sir Thomas' son, whom Patin met by accident in Paris.

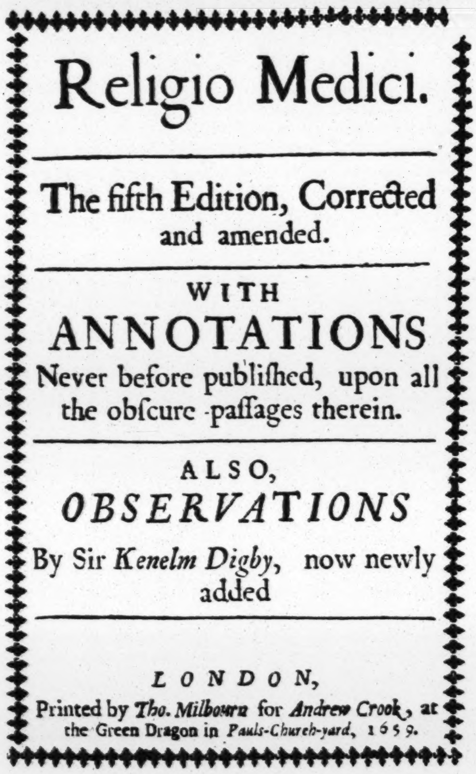


A true and full coppy of that which was most imperfectly and Surreptitiously printed before under the name of: Religio Medici.
Printed for Andrew Crooke 1645.

FIG. 2. TITLE PAGE OF THE SECOND EDITION OF THE RELIGIO MEDICI, 1645.

In 1659 the fifth English edition appeared, (Fig. 3). This contained for the first time Digby's "Annotations," which has been a companion of most of the editions published since. Although written hurriedly, many of Digby's criticisms are keen, shrewd and full of point and today his "Annotations" remains his one work that has not been consigned to oblivion.

All in all, twenty-three editions of the "Religio" were printed during Browne's lifetime; thirteen in English, seven in Latin, one in Dutch, one in French and one in German. He apparently took little interest after its first authorized publication, for all subsequent editions termed "corrected and amended" are identical with that of 1643, including even the list of errata. Charles Williams, the industrious historian of Browne, collates sixty editions up to the year of 1905.



Religio Medici.

The fifth Edition, Corrected
and amended.

WITH
ANNOTATIONS
Never before publiſhed, upon all
the obſcure paſſages therein.

ALSO,
OBSERVATIONS
By Sir *Kenelm Digby*, now newly
added

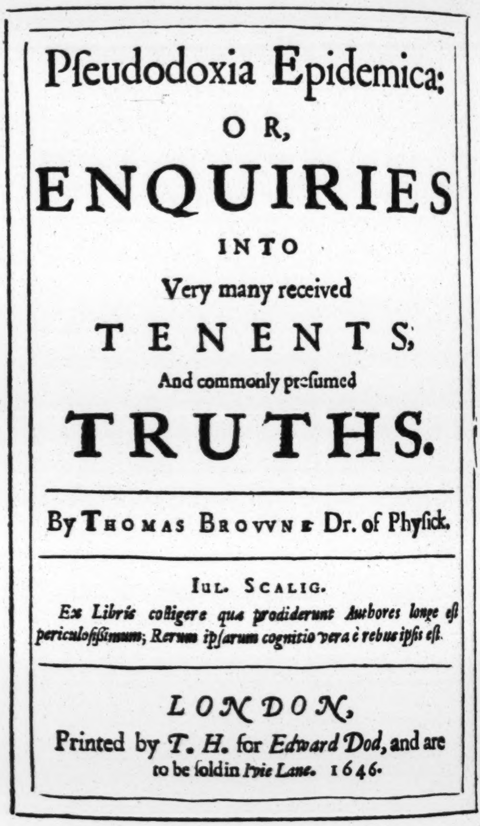
LONDON,
Printed by *Tho. Milbourn* for *Andrew Crook*, at
the Green Dragon in *Pauls-Church-yard*, 1659.

FIG. 3. TITLE PAGE OF THE FIFTH EDITION OF THE RELIGIO MEDICI, CONTAINING THE FIRST PUBLICATION OF DIGBY'S OBSERVATIONS WITH THE TEXT.

The first American edition was published in 1831 in Boston, edited by Rev. Alexander Young. The best modern edition is unquestionably that edited by Greenhill in the "Golden Treasury" series. This edition contains parallel texts of the pirated and the first editions.

Browne published two other works during his lifetime. The "Pseudodoxia Epidemica or, Enquiries into very many received Tenants, and commonly presumed Truths," published in 1646, and the "Hydriotaphia, Urne-Buriall," to which was added "The Garden of Cyrus, or the Quincunciall, Lozenge, etc.," published in 1658.

Since both these works were published at a time when Browne was well known, there is no glamor of romance connected with their appearance. The "Pseudodoxia" (Fig. 4) is the largest and most pretentious of Browne's works. It is printed in folio with 386 pages and a list of errata. A good copy is easily obtainable at a reasonable price. The book was very popular and six editions were published up to the year 1670, none of which is of bibliophilic interest.



Pſeudodoxia Epidemica:
OR,
ENQUIRIES
INTO
Very many received
TENENTS,
And commonly preſumed
TRUTHS.

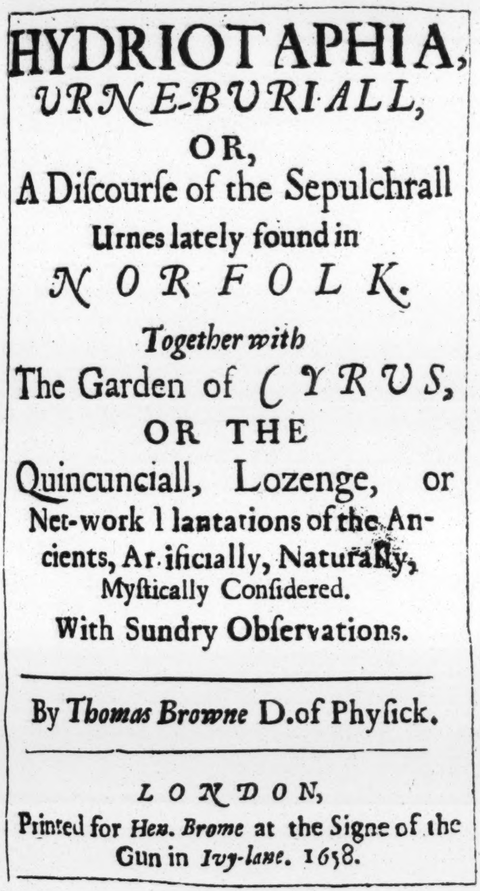
By THOMAS BROVVNE Dr. of Phyſick.

IUL. SCALIG.
Ex Libris colligere qua prodiderunt Authores longe eſt periculoſiſſimum; Rerum ipſarum cognitio vera è rebus ipſis eſt.

LONDON,
Printed by *T. H.* for *Edward Dod*, and are
to be ſold in *Ivie Lane*. 1646.

FIG. 4. TITLE PAGE OF THE FIRST EDITION OF PSEUDODOXIA EPIDEMICA.

The success of the "Pseudodoxia" indirectly aroused Browne to literary activity, but it is to a forgery that we owe the publication of the "Hydriotaphia" in the following year. In 1657, a London printer, named Fornham, published a book entitled "Nature's Cabinet Unlocked," containing Sir Thomas Browne's name on the fly leaf as the author. Browne was so annoyed that he issued a protest in which he said that "either he must write himself or others will write for him," and he "knew no better prevention than to act his own part with less intermission of his pen." Soon after, the "Hydriotaphia" appeared in print.



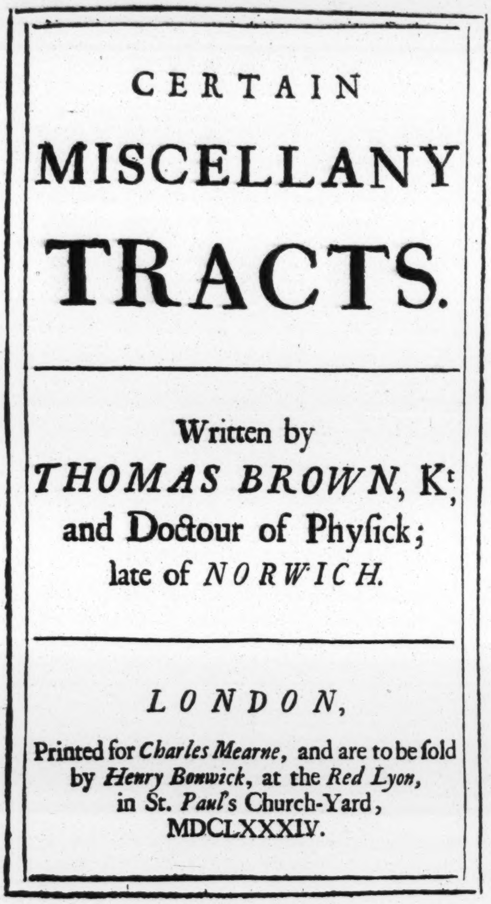
HYDRIOTAPHIA,
URNE-BURIALL,
OR,
A Diſcourſe of the Sepulchrall
Urnes lately found in
NORFOLK.
Together with
The Garden of *CYRUS,*
OR THE
Quincunciall, Lozenge, or
Net-work Plantations of the Ancients, Artificially, Naturally,
Myſtically Conſidered.
With Sundry Obſervations.

By *Thomas Browne* D. of Phyſick.

LONDON,
Printed for *Hen. Brome* at the Signe of the
Gun in *Ivy-lane.* 1658.

FIG. 5. TITLE PAGE OF THE FIRST EDITION OF THE HYDRIOTAPHIA AND THE GARDEN OF CYRUS.

"Hydriotaphia," next to "Religio Medici" the most precious of Browne's works, was published duodecimo by "Henry Brome at the Signe of the Gun in Ivy-lane." Both the "Hydriotaphia" and the "Garden of Cyrus" have a common title page (Fig. 5). There is a dedicatory epistle, 202 pages of text, an address from the stationer to the reader and a page of advertisements of books published by Brome. (sic.) This edition to be perfect must contain the plate of Walsingham urns preceding the text and the advertisements in the back. Both are frequently missing. The first edition is rather scarce, but is more commonly met with than the "Religio" and its value is therefore considerably less.



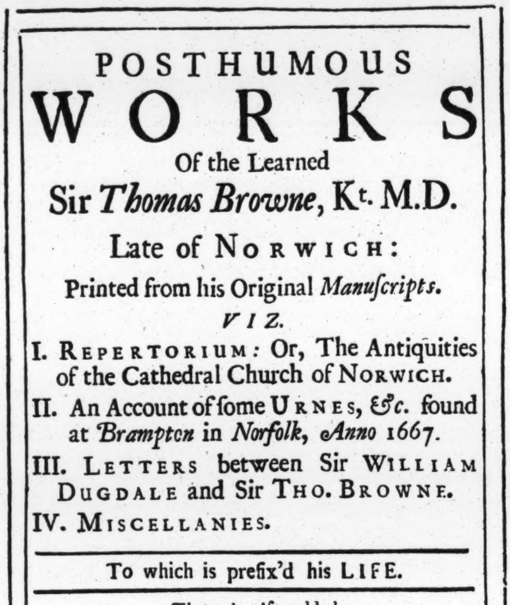
CERTAIN
MISCELLANY
TRACTS.

Written by
THOMAS BROWN, K^{t};
and Doctour of Phyſick;
late of *NORWICH.*

LONDON,
Printed for *Charles Mearne,* and are to be ſold
by *Henry Bonwick,* at the *Red Lyon,*
in St. *Paul's* Church-Yard,
MDCLXXXIV.

FIG. 6. TITLE PAGE OF THE FIRST EDITION OF CERTAIN MISCELLANY TRACTS.

While the "Religio Medici," "Pseudodoxia" and "Hydriotaphia" are the only works of importance published during Browne's lifetime, it is now known that there are two other publications of minor importance. For the first we are indebted to the wide scholarship of Edmund Gosse. It seems that Browne occasionally burst into song. In 1833, the posthumous poems of John Donne were published. The book contains a poem, signed "Tho: Browne" and is in the form of an apology "for those lesser writings of his youth which were a scandal to the admirers of the Dean of St. Paul." This poem is omitted in the subsequent editions. The second is a Latin oration delivered at the ceremony of the incorporation of Broadgates Hall with Pembroke College, Oxford. As senior fellow commoner, Browne delivered it on August 5, 1624, and it was printed by Dr. Henry Savage, master of Balliol, in his book, "Balliofergus," in 1661.



POSTHUMOUS
WORKS
Of the Learned
Sir *Thomas Browne*, Kt. M.D.
Late of NORWICH:
Printed from his Original *Manuſcripts*.
VIZ.
I. REPERTORIUM: Or, The Antiquities of the Cathedral Church of NORWICH.
II. An Account of ſome URNES, *&c.* found at *Brampton* in *Norfolk*, *Anno* 1667.
III. LETTERS between Sir WILLIAM DUGDALE and Sir THO. BROWNE.
IV. MISCELLANIES.

To which is prefix'd his LIFE.

There is alſo added,
Antiquitates Capellæ D. JOHANNIS Evangeliſtæ; *hodie Scholæ Regiæ Norwicenſis. Authore* JOHANNE BURTON, A.M. *ejuſdem Ludimagiſtro.*

Illuſtrated with *Proſpects*, *Portraitures*, Draughts of *Tombs*, *Monuments*, &c.

LONDON:
Printed for *E. Curll*, at the *Dial* and *Bible*; and *R. Goſling* at the *Mitre* in *Fleetſtreet*. 1712.
Price 6 *s.*

FIG. 7. TITLE PAGE OF THE FIRST EDITION OF THE POSTHUMOUS WORKS.

When Browne died in 1682, his manuscripts came into the possession of Archbishop Tenison, the executor of his will, delivered by the "Lady and son of the excellent author," and in the course of the next thirty-four years four publications appeared. The first, dated 1684 and entitled "Certain Miscellany Tracts" (Fig. 6), contains an engraved portrait copied from the painting in the Bodleian and thirteen tracts on the most diverse of subjects; "on plants mentioned in the Scripture, on fishes eaten by Christ, on hawks, on cymbals, on artificial hills, on the answers of the Oracle of Apollo," etc. At the end there is a chapter on rare books, the titles of which would make a bibliophile green with envy. Monro claims there is an edition of 1683 which is exceedingly rare. The second publication, "A Letter To A Friend" appeared in 1690, a thin folio and by all odds the scarcest of Browne's works. I have never seen a copy of this edition. It contains some of Browne's richest thoughts. In 1712 there appeared the "Posthumous Works" (Fig. 7) which contains: "I. Repertorium: Or, The Antiquities of the Cathedral Church of Norwich. II. An Account of some Urnes, &c., found at Brampton in Norfolk, Anno 1667. III. Letters between Sir William Dugdale and Sir Tho. Browne. IV. Miscellanies." Among the Miscellanies we find "A Letter to A Friend." It contains many illustrations, mostly heraldic devices and tombstones, among others that of Sir Thomas himself. The fourth and last posthumous publication was "Christian Morals," in 1716. This is the poorest of Browne's works.

THE LIFE AND WORK OF SAMUEL THOMAS VON SÖMMERRING*

By THEODORE H. BAST, PH.D.

MADISON, WISCONSIN

IN the history of physiology and anatomy there is an epoch of development which began with Boerhaave and Bernhard Siegfried Albin, reached its height in Albrecht von Haller, was continued along the same lines by Wrisberg, Scarpa, Cuvier, Meckel, Rudolphi, Blumenbach and Bojanus, and was closed by the accurate dissections of Bichat. One of the most important places in this epoch, which extended approximately from the beginning to the end of the eighteenth century, was filled by Samuel Thomas von Sömmerring.

Samuel Thomas von Sömmerring was born in Thorn, East Prussia, January 18, 1755, almost 300 years after Copernicus, who first saw the light of the world in this same city. His father, Johann Thomas Sömmerring, was born February 24, 1701. He began his medical education in the then prominent high school of Lannenburg, continued under Frederick Hoffmann at Halle and finished under Boerhaave and Albin at Leyden, Holland. It is of note that in 1725, Albin (whose great scientific endeavors were rivaled fifty years later only by the great anatomist, von Sömmerring) placed on the father, Johann Sömmerring, his doctor's hat. When Samuel Thomas was born his father was city physician of Thorn, a position which he held as long as he lived. This position no doubt gave Samuel Thomas an early unconscious acquaintance with medical and anatomical terminology. These influences were especially felt during his gymnasium years when his father took him to autopsies as often as possible.

Sömmerring's mother, Regina Geret, born June 4, 1721, was the daughter of Christoph Heinrich Andreas Geret, minister of the Evangelical church and senior of the Protestant ministers of Thorn. In 1724 when, on account of certain demonstrations by the students of the Protestant gymnasium, the students of the Jesuit gymnasium persecuted the Protestants by beheading ten persons publicly, the Reverend Mr. Geret had to flee to another town to escape death. This incident was often related in the Sömmerring home and it left a lasting impression on Samuel. In his later life, whenever his thoughts were religiously inclined he often related with great feeling the account of the "Blood-bath of Thorn."

Samuel Thomas was the ninth of eleven children. All died except one older brother, Johann Gottlob, who later became mayor of Thorn, and two sisters, Johanna Dorothea and Elisabetha Catharina, who married and lived in Thorn. Only the latter of these was younger than he.

Samuel, like his brother, displayed great enthusiasm for making collections of various sorts. Among these was a collection of his earlier practice writings in German and in Latin, as well as many Christmas, New Year and birthday greetings to his parents, which testify to his literary ability at the early age of six to nineteen. The earliest of these were in German verse but the later ones were in Latin prose. All of them expressed a deep childlike thankfulness for the beneficence of his parents and the goodness of God. At the age of eleven he prepared a little book entitled "Flowers and Plants from Life, drawn by Samuel Thomas Sömmerring, Anno 1766," which gives evidence of his early careful observation of natural

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* Read before the Wisconsin Medical History Seminar, University of Wisconsin, February 20, 1924.

NOTE. Acknowledgment is made for the help received from Dr. William Snow Miller and for access to the many works of Sömmerring which his library contains; also to Dr. M. J. Greenman who kindly furnished the copy of Sömmerring's letter to Caspar Wistar.

forms and his skill at drawing. Not only does this book contain drawings of plants but also of highly colored butterflies placed in natural relationship to them.

At the age of twelve he began a diary which he continued throughout his college career. The first notation in it was that at the beginning of September, 1767, he stopped taking drawing lessons. He gave detailed account of all the happenings in the family and in the city. Among these were births, deaths, marriages, and visits of traveling menageries. In astronomical phenomena he took great interest. He made sketches of the phases of every eclipse of the sun and moon, and gave accounts of comets and other uncommon appearances. The varied experiences of his preparatory and academic life were all carefully written down. The incidents of the war of 1768 to 1772, when Poland was divided, he pictured most vividly. This careful transfer of his observations and experiences into writing and sketches no doubt was a fundamental factor in his keen observations, accurate descriptions and clear illustrations later. In 1769 Samuel entered the gymnasium of Thorn. It was under the influence of Rector Kries that his love for anatomy was first kindled. The five years Sömmerring spent there were almost entirely devoted to the study of the classics. His later writings and the fact that he could carry on a conversation almost as well in Latin or French as he could in German give evidence of his thorough training during this period.

In the autumn of 1774, at the age of nineteen, Sömmerring entered the University of Göttingen, where for four years he came in contact with men, methods, experiences, and knowledge which had a moulding influence on all his subsequent thoughts and actions. Until his death he remained in intimate relationship with the faculty of Göttingen, their publications and the library. It was during the third semester that he dedicated his efforts to the subject which he pursued throughout his life and to which he contributed so much knowledge.

The very prolific written communications with his father during the years of his stay at Göttingen present in a most vivid manner his pleasures and hardships and loves and disappointments, but through them all his unquenchable enthusiasm for knowledge and firm determination to achieve the highest attainments are evident.

In September, 1774, he began his journey to Göttingen. He stopped at Berlin, at Wittenberg to visit Luther's grave, at Leipzig to visit his brother, a student of law, at Gotha and Kassel. He took unusual interest in the university buildings and especially in the biological laboratories in these cities. In a letter to his father he describes all his observations in great detail, especially the insect cabinet of Dr. Tschaken, which consisted of thirty drawers, each of which was three times larger than his own entire cabinet.

From Leipzig to Göttingen Sömmerring was accompanied by his brother. On October 14, 1774, he matriculated. In the selection of his subjects he states that he followed the advice of his father and Ludwig's "Methodus doctrinae medicinae." He accordingly took anatomy under Wrisberg, logic and metaphysics under Feder and physics under Erleben. Besides these regular subjects he studied Putter's "Description of Göttingen." Soon after Richter had commenced his lectures on diseases of the bones, Sömmerring visited one of them and, upon finding that he could follow without difficulty, attended them regularly. These lectures no doubt were in part responsible for his keen interest in bones and their diseases.

Anatomy had the greatest fascination for him. He read all obtainable works on the subject. Wrisberg soon recognized his ability, praised him publicly, and made it possible for Sömmerring to have access to copper plates to which students as a rule had no access. Of course special privileges and honors added extra expense and reduced his already limited allowance. He writes his father:

> I deny myself much, and eat no butter, which all other people in Göttingen eat. For supper I eat nothing but dry bread and drink no coffee for breakfast. On rare occasions for my desert at night I eat a piece of dry plum *kucben*. Since one does not wear cuffs every day, I save a little on laundry money.

In all of his letters he expressed a child-like attitude of exceptional devotion to his father and to God, but when it came to money for his education he was in constant conflict with his frugal father. When his father wrote that he would give him money for a three year course, he replied: "The study of medicine is much too extensive to properly finish in three years. I would much rather never have started education than to be a half-educated man."

In answer to another letter from his father he writes:

> You wrote, my dear father, "If you wish to be a *medicus practicus* you must learn to take short cuts and not study longer than three years." I have never permitted myself to think of being a mere *medicus practicus*. I have determined to learn the fundamentals of knowledge and therefore am unable to finish in three years, in order, that if God permits, I may be called to a position in an Academy. Nothing, nothing goes above education, and where can one reach higher attainments than in an Academy. I have therefore determined that I shall study anatomy and physiology and attend lectures in pathology.

In the fall of 1775, after he had been at Göttingen only one year he writes:

> Most students become mere practitioners, none care like I, to take up anatomy and physiology and it ought not to be hard therefore to receive an appointment in an Academy. There are many vacancies to be filled here and I have therefore already collected eighteen subjects.

His enthusiasm for knowledge was unlimited; he took chemistry, physics, mathematics, and also attended three lectures a week on religion by Dr. Lesz, who discussed the criticisms of unbelievers, including Voltaire. He writes, "As an educated man I also have the duty to become better acquainted with religion." In January, 1776, he wrote to his father that he had studied in great detail Weitbrect's work and that he had completed the fourth volume of Haller's "Physiology." Besides his close relations with Wrisberg, he became a great friend and admirer of Blumenbach who became a resident of Göttingen in 1775 and gave lectures on natural history. A lifelong friendship developed between them. It was Blumenbach and Wrisberg who inspired in him enthusiasm for research. This endeavor endangered his finances and again he humbly begged his father to increase his allowance. He used every possible leverage to open his father's purse. He lamented the deprivations he had to endure. He tried to soften his father's heart by picturing to him the agony produced by meals of dry bread and total abstinence from coffee and beer. To make the condition all the more appealing he turned, in the very next sentence, to picture his great enthusiasm for knowledge. He writes:

> The Christmas vacation I spent in Göttingen and it was only with difficulty that I refrained myself from dissecting on Christmas day. I have finished a great dissection of the nervus sympatheticus. Wrisberg calls me Herr Neurologue, and has praised me publicly, which of course has brought hatred and jealousy.

His frugal father, however, was not easily moved but finally did increase his allowance. When in March, 1776, his brother finished his schooling and soon found a position, Samuel launched a new attack and asked for his brother's allowance. Finally he was granted permission to study a year longer.

During the Easter vacation Sömmerring took a trip as far as Fürstenberg, which was an extra expense. He again begged for more money from his father, making excuses for the trip by enumerating the benefits. Among these he mentioned his meeting with noblemen and the acquisition of valuable methods used in the other universities. Among the items of expense he included the cost of having his hair dressed which he says was now necessary since his research often brought him into association with the nobility. He informed his father, however, that in his private life he deprived himself of food and conveniences. He ends the letter by saying; "A worse miser than I does not exist."

His father finally sent the money but stated that his son caused him a great deal of concern. Samuel answered:

> Do not be unwilling because I beg in order to go to College. Do you not wish to give me the necessities, why then did you allow me to take up medicine, this expensive subject? This is my seeding time, the more I sow, the more shall I reap. Those who finish in three years, seek only —with the grace of God—to pass their examinations. I have never refused to practice medicine, dear father, if you wish it; however, a mere practitioner I do not wish to be, could I but carry on theoretical medicine, this I would consider my greatest happiness. And if at the end of my studies I have not a red penny, but have learned something, then certainly bread cannot be withheld from me. Please do not withhold anything from me. I will be glad to settle with my brother and sisters. Now I want to feed my soul, then I shall receive my fortune at the end of this life. Kindly continue to send me the necessary money. I have allowed the professors to wait so long already that in order not to cause unpleasantness I shall have to do some studying alone this winter.

Regarding activities, professors and studies, his letters give much information. He praised Baldinger for his very entertaining lectures which were the result of a successful practice and a sense of humor. Baldinger possessed all the latest literature and permitted his students to have access to it. Richter's instruction in surgery was of unusual interest to him. He greatly desired to practice surgery, but he says: "Where shall I obtain the money for the expensive instruments." Wrisberg had a very successful obstetrical practice and it was Sömmerring's good fortune to be permitted to assist him in many cases outside of the city. During his last year he lived at the home of Dr. Blumenbach, where he enjoyed not only the fine library but also the fine personality of this great anatomist. After Sömmerring left Göttingen their friendship was continued through correspondence until 1828, two years before his death.

His plan for the winter of 1777 was to confine himself to the study of anatomy. He writes:

> My plan is to know Anatomy. There is now a great shortage of Anatomists. God keep me away from my home as long as possible, or else my enthusiasm and spirit will vanish, everything will be smothered by the miserable practice, from which I shudderingly shrink. Fifteen years I spent in the study of Latin, and I shall now complete in four years a science on which depends the life and health of my fellow men.

The winter of 1777 he spent in intense study on that difficult organ, the brain; a subject which interested him profoundly throughout his life. At his room he made drawings, comparisons and descriptions of all the mammalian brains that he could obtain. Wrisberg praised his work and advised him to choose anatomy as his career, to write a good thesis and to make a trip to England. Wrisberg promised that if this schedule were followed he would find a position for him in some academy. This inspired Sömmerring to unusual effort. He determined to rise at six, remain at his work until twelve or one o'clock and to receive no visitors nor make visits. Sömmerring at once submitted his plans to his father. Anxiously he waited for nineteen days for a reply which ordinarily would have reached him in eleven days. The father sanctioned all of his son's requests except the trip to England which he said he would grant under no conditions.

In the fall of 1777, Sömmerring passed his examinations and received special praise from each professor. All this had been earned at no small cost; for he had applied himself so untiringly to his task, that his body became greatly emaciated. He wrote to his father that at Göttingen he was becoming thinner and thinner so that already he did not look like himself, but he added: "However, the more I lose bodily, the dearer and easier are the sciences for me."

During the winter several good anatomical vacancies occurred, but for some reason Wrisberg, who had always promised Sömmerring a good location, made no effort to secure one for him. Wagner in his biography of Sömmerring expresses the view that Wrisberg, realizing that Sömmerring's work was already overshadowing his own, became jealous, although openly he tried to conceal it. In this connection it is of note that with the completion of Sömmerring's thesis on the "Brain and Origin of the Cranial Nerves," Wrisberg's value both as teacher and investigator dropped much below par. For some years after attempts were made by members of the Göttingen faculty to place Sömmerring at the side of Wrisberg as professor of anatomy, but his modesty did not permit this. When Wrisberg finally died in 1808, Sömmerring was so firmly settled at the Academy of Munich that he was unable to accept the call to Göttingen. It was Blumenbach and Heyne who frequently complained to Sömmerring regarding Wrisberg's inactivity.

In April, 1778, Sömmerring finished his thesis, entitled, "De basi encephali et originibus nervorum cranio egredientium libri quinque." He dedicated it to his father just at the time when the latter had finished his fiftieth year of activity as physician in the city of Thorn. At his promotion Dean Baldinger gave him unusual praise. Wrisberg in a special letter to his father congratulated him on the splendid record and great ability of his son. Sömmerring's thesis attracted great attention among the greatest anatomists of the time, such as Petrus Camper, Palletta, Scarpa, Alexander Monro and others throughout Europe. While the quality of his four plates does not in any way compare with the high quality of the plates of his later anatomical works, yet they are far better and clearer than any of the previous drawings on the subject. Not only did this masterpiece attract attention among the anatomists but it also touched his old father and so softened his heart and opened his purse that he sent 700 *thalers* and his consent to a half year trip to England, which Sömmerring began May 17, 1778.

His first stop was at Hanover. He went there partly because he wished to express his gratitude to the ministers who had so kindly sent his dissertation to the king and partly because he wished to become acquainted with the great physician, Zimmermann. When Sömmerring had sent his dissertation to Zimmermann the latter answered it as follows:

> Through such productions the reputation of Göttingen will spread over all Europe. Disciples of your type bring honor to their teachers. Students from foreign lands will come to Göttingen in order to study Anatomy there like you . . . It is not enough to have made you a doctor. Every Academy of Science would consider it a great honor to have you one of their number.

When Sömmerring came to Hanover, therefore, Zimmermann received him with the greatest kindness and after he had left, wrote him that he had not seen a young man for a long time who pleased him so much and that his face and entire personality were exceptionally attractive.

On July 1, he continued his journey and after several minor stops arrived at Franeker, Holland, July 6. Here be became acquainted with Petrus Camper, at that time the greatest physician and anatomist of Holland, who kept him so interested that he did not find time to write to his father until July 21. In this letter he informed his father about his trip and visits with Camper. The following extracts give us an insight into his experiences here.

> I have now rented a private room for three weeks, which is far better than I could get at any hotel. Because I learned low German at Göttingen I have less trouble in getting along with the local dialect. I am not taking time to learn their

language because I could not remember it long. My conversations are in Latin and with those who do not speak Latin I speak French.

He expressed his unusual satisfaction with his trip and stated that the value of his relation with Camper surpassed his expectations.

Professor Camper is a man of stately physique, very lively, unusually busy, and speaks Latin, French and English with equal ease. Already on the second morning after my arrival he, in answer to a written inquiry as to when I could speak with him, looked me up and paid me a two hour visit. In the afternoon from 3 to 9 P.M. I visited with him. After this I spent almost every other afternoon with him, and took dinner with him a number of times. He possesses a beautiful collection for the study of comparative anatomy.

He writes that among the large collection of skeletons and skulls of almost all large mammals, the most wonderful is the complete skeleton of an elephant. He tells about Camper's attempt to investigate the epidemic which killed 1,400,000 cattle during the years 1769–1772. Camper inoculated oxen on which he made hourly examinations. His investigations were greatly opposed. Preachers condemned him as a man who was attempting to halt a punishment sent by God. So extreme was the opposition that attempts were made to kill him while he was making his examinations. Even the government found it impossible to give him protection and he was forced to stop.

This letter which covers over five printed pages shows us with what unusual ease young Sömmerring could express himself in writing and also what clearness and exactness he put into expressing his various observations.

Camper thought very highly of Sömmerring and remained in correspondence with him until his death. In a letter to Zimmermann, Camper writes: "I have never seen a young man like this Mr. Sömmerring. He has an astonishing vivacity to know everything and he manifests an equal interest for invention and discovery. I love him with all my heart."

On August 3, Sömmerring took his departure from Franeker. Camper, who had traveled extensively, gave him many letters of introduction. Sömmerring stopped at Amsterdam where he was greatly interested in von Marum's museum. His next stop was Leyden where his father received his doctor's degree. He took great pride in seeing some of Albin's preparations and was deeply impressed by the place where his father attended the lectures of Boerhaave. On August 18 he arrived in London. He visited Oxford but spent most of his time with John Hunter, whom he compared in many respects to Camper. Sömmerring took many of his breakfasts with Hunter, and it was at the latter's house that he became acquainted with William Hunter, Cruikshank, Sheldon and Pringle.

His studies in London were confined mainly to anatomy and surgery. He eagerly studied Hewson's lymphatic injections, and took his first lessons on injecting them under Sheldon, the anatomist. This technique he perfected under Alexander Monro in Edinburgh. Sömmerring was the first to bring this technique into Germany, and Tiedemann prided himself on having learned it from him. It was Hunter who taught Sömmerring to make sections of teeth.

At London he became acquainted with Georgius Forster, in whose home he spent many evenings. A friendship was soon established between these two that was second only to that of Jonathan and David. Forster was especially interested in botany and thus Sömmerring met Linné's son and other great scientific men. Forster was also the chief reason for Sömmerring's membership in the order of Free Masons. Forster played a great part in Sömmerring's later life as we shall presently see.

At the suggestion of friends he made a trip to Edinburgh where he entered into a close and helpful friendship with Monro, who has already been mentioned. It was here that he had occasion to learn more about the microscope and recognized in it great possibilities in spite of the fact that by most of the scientists it was regarded as a worthless instrument. In the beautiful city of Edinburgh, Sömmerring acquired a lifelong love for English customs, a passion which is rarely found among true Germans. The greater part of the winter of 1778–1779, he spent in this city. During this time he kept his diary and wrote his letters to Forster in English.

March saw him again in Holland where he spent another month with Camper studying diseases of the vertebral column. In April he was back in Göttingen in a penniless condition. He again asked his father for money. His father sent this with the request that his son should come home once more before he accepted a position. But it happened that just at this time an offer was made him as professor of anatomy at the Collegio Carolino at Kassel in Huber's place. Forster had just previously received a chair of natural history and he was greatly concerned in accomplishing Sömmerring's appointment. Sömmerring was drawn by this offer because of its proximity to Göttingen, his friends Forster and Camper, the time he had left for study, the large zoological gardens and the clean, new, anatomical theater. In June, 1779, he received this appointment with the salary of 400 *thaler*. He accepted and was obliged to come there at once. This necessitated a postponement of his trip to Thorn. In August he received leave of absence to make his trip home, where he spent a happy month. The latter part of September saw him back in Kassel. He at once became absorbed in his task, first to gather material for his lectures and research, and secondly to make a collection for the new museum. The landgrave who supported the zoological garden bought for Sömmerring a collection of thirty-six embryos, most of which were in the early stages. In the task of finishing the anatomical theater Sömmerring did not hesitate to lend his hand even in the rawest type of work. "Most of the skeletons," so he writes his father, "I make myself, just as Camper does."

During these first months of his stay at Kassel the result of his work on the lymphatic system, which he did in England, appeared in published form. During the first years at Kassel he did not attempt to prepare many publications but rather to spend his large amount of spare time in the study of the latest researches. To better accomplish this he applied to Heyne at Göttingen for the position of making reviews for the *Göttingsche Anzeiger* which was then the best and most widely circulated journal of its kind in Germany. Haller had previously held this position, but after his death Heyne had difficulty in finding someone to do it, and in his first letter to Sömmerring he complained that Wrisberg, who was to have taken Haller's place, was holding up the publication because of his inactivity. Heyne soon discovered Sömmerring's ability along this line of work, and as a result an intimate friendship developed between them which was interrupted only by Heyne's death in 1812. Wagner writes that after Sömmerring's death, 450 letters were found written to him by Heyne between the years 1779–1812. Sömmerring's letters to Heyne from 1791–1812 numbered 430. To his father Samuel wrote: "I have taken over all the anatomical work of the *Göttingsche Anzeiger*, which of course means little money but much more knowledge. It is a great honor to work on the first journal in Germany in Haller's place."

Sömmerring's life during the five years which he spent at Kassel may be considered from two points of view. The one has to do with his professional activities and the other with the idealistic activities which culminated in a secret bond between Sömmerring, Forster and later Johannes von Müller. The relationship between these men was of such a nature as is rarely found, and is only described in poetry. The details and facts back of this friendship have always been hidden by the veil of a fraternal order. It will be recalled that Sömmerring met Forster in England and there joined the Free Masons. It appears that these young enthusiasts did not find in this order that which their idealistic nature longed for and as a result they formed a degree of their own within the order. From papers and letters it was determined that there were at least three things that lay at the bottom of this bond. First, they were engaged in alchemistic activities. They believed that they could make gold. It seemed that advantage was taken of them in some way and they ran deeply into debt. Secondly, they believed that communion with the dead was possible and that in this way something could be learned regarding the life after death. Thirdly, both Sömmerring and Forster in their activities developed a sort of religious exaltation and religious fanaticism which led them into long incessant prayer resulting in a state similar to that of our present day Holy Jumpers. It was not until about 1783, that they began to realize the danger they were approaching within this order. At any rate they were more and more overtaken by a fear of something from which they did not seem to be able to loose themselves. Whatever this was it developed into an almost unbearable condition so that Forster, who was more impulsive and made very quick decisions, left in the Spring of 1784 for Wilna to take a position which he never liked. Sömmerring, too, still troubled and lonely, felt that he must leave Kassel, and accepted the position as professor of anatomy and physiology at Mainz on September 9, 1784.

Except for this unfortunate development his stay at Kassel was ideal. His teaching took little of his time. He had much opportunity for study and thought. That his thought and time were greatly usurped by his bond with Forster may be deduced from the fact that he published little during these five years. Although association was largely confined to Forster and Müller, he had a great many other friends, especially among the nobility and statesmen. The landgrave had an unusual liking for Sömmerring and procured for him almost anything he desired in anatomical material. All the animals which died in the zoological gardens were presented to him for study. Thus he had much occasion to acquire knowledge, but only published, besides the paper on lymphatics already mentioned, a popular paper entitled "Bemerkungen über den Bau des Orang-Utang." The landgrave had started a negro colony near Kassel which gave Sömmerring opportunity to dissect a number of negro bodies. This occasioned his publication in 1784 entitled, "Über die korperliche Verschiedenheit des Mohren vom Europäer." In 1785, this was rewritten and two copper plates added. In this paper he carefully describes the body internally and externally, the body fluids and excreta, and makes a comparison with the body of a European. He found that the negro resembled the ape in many respects but Sömmerring nevertheless placed him in the same species with the European white man. This short paper still stands as a classic. It is the only purely scientific piece of work that he did at Kassel. It is of note that he did not put it into form until after Forster left and did not publish it until after he himself was at Mainz. He dedicated it to his dearest friend, Forster, in the most intimate manner. The last sentence of this dedication best expresses his mood: "The completest harmony of thought, which has been strengthened by our separation, will unite us again." Several years later Sömmering did manage to find a place for Forster at Mainz where they were once more united, but where their too intimate friendship gradually died.

The great regard which the landgrave had for Sömmerring made possible his entrance into the highest class of society at Kassel. On many occasions he dined with the landgrave, who also was instrumental in acquainting him with the secretaries of state, Bürgel and Schlieffen, who were of great help to him. It was through this source that Sömmerring became acquainted with his lifelong friend Goethe. Sömmerring, because of his meager income, had to live a very plain life and was unable to return the pleasant entertainments which he received from the many dignitaries that he came to know. To his father he complained that he was unable to entertain his nearest friend and begged him to send a service set consisting of six silver knives and forks. His father informed him that he would give him this on his wedding day. But Sömmerring, who always knew how to manage his father, wrote that his whole reputation hung on this, and that it was but a trifle for the son of the first physician of Thorn to ask. Finally his father sent it.

With his removal to Mainz in 1784 Sömmerring entered the more stable and productive period of his life. Being separated from Forster he had more time for practical work and less occasion for idealistic and religious dreaming. He interested his students in research problems and he himself gathered together his previous observations and, with the advantage of a fine anatomical museum, added to them so that in the first period of his stay in Mainz he published a number of papers. To a number of works he added notes and additions. Of these the most important is the revision of Haller's "Grundriss der Physiologie," by Wrisberg, Meckel and Sömmerring. This revised edition was a valuable textbook. In 1784, he described the optic chiasma; a discovery which resulted from the study of diseased eyes. In 1785, he published an article on the pineal body with special reference to the variation of brains in various individuals. In 1797, he published his "Tabula sceleti feminini juncta descriptione." Albin had published a beautiful plate of a male skeleton but had lamented that he had none of a well-formed female skeleton as its counterpart. Sömmerring, therefore, put forth every effort to find one. He carefully observed all the female bodies which he received, but none were perfect enough for him. Finally he received the body of the most beautiful girl in Mainz who had died at the age of twenty. He prepared the skeleton and his artist, Koeck, made a beautiful drawing of it as a counterpart of Albin's male skeleton. In 1788, appeared his paper on the brain and spinal cord, which was a predecessor of his five-volume anatomical handbook. In 1790, he wrote his first paper on paleontology.

Sömmerring's papers were not all of a strictly scientific nature; he occasionally wrote a popular paper which gave him public recognition. Such was his paper of 1788, entitled "Injurious Effects of Tight Lacing" in which he enumerated the bad effects of tight lacing on the normal functioning of the internal organs. In a skilful drawing he shows side by side the differences in the skeleton of a Venus de Medici and the skeleton of a tightly laced woman. This paper created such intense interest that the fad of tight lacing and hoop skirts at once began to subside. In 1793, five years later, when he revised this article, the custom had so subsided that in his preface he wrote as follows: "Previously it was an exception to see women, who were not tightly laced, in public places of our city but now the reverse is true. Now one laughs at tight lacing as a fad of the past century. One seldom sees girls nowadays so tightly laced as to resemble wire dolls whom everyone regards with pity as being shown off by some old-fashioned aunts."

The above paper and one on "Dislocations and Fractures of the Vertebral Column" which was accompanied by a plate of four drawings of a broken vertebra, were given prizes by scientific associations.

Most of Sömmerring's research time at Mainz, however, was spent on two other pieces of work, both of which appeared in 1791. The one was entitled, "Abbildungen und Beschreibungen einiger Misgeburten, die sich ehemals auf dem anatomischen Theater zu Cassel befanden," and the other was his five-volume anatomical handbook. The material for the former was partly collected at Kassel. Among the large number of human embryos which he studied he found an almost complete series of duplicates. (This collection is now supposed to be in the museum of Marburg, at least it was placed there by Bünger.) This treatise consists of very clear drawings of each formation in the series and is accompanied by a description of each plate. Sömmerring held himself entirely within the limits of descriptive anatomy. He stated that he could be of best service by simply stating facts and by allowing everyone to draw his own conclusions. He so arranged his plates that the reader is prepared for Sömmerring's statement at the end of the article that to him it is a pleasure to find and show the orderly and natural degrees of change that occur even in the malformations of the human body. This was in very marked contrast to the views of that time which regarded malformations as products of witchcraft and association of women with the devil, a view which was held even among scientists for some time after this publication appeared. The point of view which Sömmerring presented was fundamental to all the subsequent development of embryology.

During the same year, 1791, the first edition of his five-volume anatomical handbook, "Vom Baue des menschlichen Körpers," was published. Volume one deals with bones; volume two, ligaments; volume three, muscles; volume four, vascular system; volume five, brain and nerves. Part II deals with viscera and the apparatus of digestion and respiration. It did not appear until 1796. The second edition appeared in 1801 both in German and in Latin. This work was different from any text that had heretofore been in use in that it was exclusively anatomical. Physiology and anatomy had always been combined; this fact may have, in part, been responsible for the lack of knowledge of anatomical detail. It was Sömmerring's purpose to prepare a text which contained only anatomical facts not copied from some existing description but actually observed by himself. He tactfully avoided all discussion of mooted questions of function and refrained from advancing new theories. This precaution he took in all of his writings except one, "The Organ of the Soul," of which we shall speak presently. He purposely avoided the use of proper names in naming organs; for he held that the credit of discovery was in many cases erroneously placed. Thus he writes in his preface: "Did not Fallopius know the ileocecal valve long before Bauhin? . . . Did not Haller decribe the venous valve of the right auricle more correctly than Eustachius?" He attempted to use only such terms as were the most descriptive, and in this effort aided much in the simplifying of anatomical terminology. Sömmerring's unselfish and broad-minded outlook in writing this text is best shown by a passage from his preface.

> I wish to produce a handbook and to organize it in such a manner, that subsequently one can use it as a basis, change it as may be necessary, take away from it or add to it. I therefore nowhere use the first person in the text except for brevity in part of the chapter on "Variations in bones in different nationalities."

For two decades the handbook was used in practically all German medical schools. Twenty years later John Fredrick Meckel justified the appearance of his similar text as follows: "The excellent German handbook, which we possess, Sömmerring's Masterwork, handles most of the systems so excellently that it may in its greater part be considered final, but it is incomplete in that it does not contain the sense organs, urinary system, reproductive system and embryology. Furthermore, while it contains the general facts of each system it does not contain the generalities of the entire structure." In spite of these valuable additions, Meckel's text never became as popular among students as Sömmerring's more voluminous handbook. It is strange that Sömmerring did not include the sense organs, for he knew them best of all and some years later presented them in exquisite form in separate brochures. The reason for not including the urinary and reproductive systems was no doubt due to the fact that the French

Revolution drove him from Mainz before his observations were complete and his subsequent work at Frankfurt as practitioner prevented its completion. In spite of its incompleteness his text presented pure anatomy, an idea so valuable that Doellinger in 1828 speaks of Sömmerring as the founder of general anatomy. In this connection it is of interest that Hildebrandt published a handbook very much like that of Sömmerring both in style and content, which appeared at about the same time.

In 1796, he received a prize for a paper on the nature and prevention of hernia, from the Scientific Society of Göttingen. The paper, however, which aroused the greatest controversy and brought Sömmerring a great deal of criticism, was his paper on the "Organ of the Soul," which he dedicated to Kant. In this paper he failed to adhere to his policy of publishing only pure observations. Because of its many dogmatic statements it was subjected to the severe criticisms of philosophers, metaphysicians and scientists. Even Kant, who was a great admirer of Sömmerring's previous work, had no word of praise for it. In fact from none of his scientific friends did he receive the applause which he had received for his other work. Sömmerring believed that the cranial nerves had their common origin in the walls of the brain cavity or in the cavity itself, and since the cavities are filled with fluid he concluded that the fluid was organized and was the common seat of sensations (*sensorium commune*). He tried to establish that the nerve impulse or motion could not begin in a solid part but rather in a fluid which could easily be set in motion. He emphasized the thought that the *sensorium commune* was in that place where all the nerves had their common origin, namely in the cavity of the brain. He then attempted by *a priori* methods to prove that fluid was animated. As evidence he quoted the Bible. "And the Spirit of God moved upon the face of the water." "Thales," he writes, "found the Ultimate in the water." "The best thinkers found that the animation was not only probably in the water but that water was actually essential for the production of life. And what is the ether of Leibnitz, Newton, Culer and Kant other than fluid?"

Because of this animated nature of water Sömmerring was convinced that the cerebral fluid, especially since it is so closely related to the ending of the nerves, was organized and that this organ was the seat of the soul. Kant criticized this point of view in that he considered it inconceivable to have the individual particles of water organized. He, however, suggested a hypothesis even less believable. He suggested that the various impulses effect the fluid in a different chemical manner. For instance, the impulse of sight liberates a certain element from the chemical complex constituting the cerebral fluid, which produces the specific sensation. The impulse of hearing liberates another element. In each case the liberated element united with the complex as soon as the stimulation stopped. Göethe made a fair criticism of Sömmerring's paper in one of his letters to him. He writes:

> It seems to me you have harmed your observation, experience and knowledge by the title and the method which you chose . . . Had you ignored the activity and controversies of philosophers, and restricted yourself to natural findings no one could have criticized it, but on the contrary everyone would have honored your endeavors. Had my advice been asked, I would have entitled the paper "Ending of Nerves in the Brain."

He then suggests what he would have left out.

> If it had then been reorganized, leaving out all dogmatic statements, many would then after reading your paper have said, "Oh, yes I can well conceive that the *sensorium commune* is found in the fluid of the cerebral cavity, another might have found the idea impossible, a third would have taken an indifferent attitude, and for all your paper would have been of equal great

and specific worth and each would have had to thank you for the many points of information.

The opinions of most of Sömmerring's friends on this paper were concealed by tactful evasions. Blumenbach never mentioned it. Jacobi made sickness an excuse for not commenting on it but never referred to it later. Heinse ignores the dogmatic imaginations, and comments favorably on the purely anatomical findings, while Metzger seems to be convinced that the *sensorium commune* might be in a fluid as readily as in a solid part of the brain.

The publications already referred to and those which he finished after he lived in Frankfurt, the material for which he had prepared at Mainz, give us a good conception of his productivity during the period of his connection with the University of Mainz. During the first year after his arrival there, he discovered a talented young man by the name of Christian Koeck who was employed as an ordinary model maker at one of the art shops. Sömmerring secured him as his own model maker and artist. Sömmerring, who himself had an artistic hand and mind, soon developed young Koeck into an artist of great merit. One needs only to glance at the drawings in Sömmerring's publications on the sense organs or his "Tabula sceleti feminini juncta descriptione" to realize what Koeck must have meant to him. Sömmerring thought very highly of him and retained him until his death in 1818. Koeck was so skilful that he received a professorship of drawing at the technical school at Mainz. When Sömmerring was about to leave for Munich, Koeck accepted a position at Moscow, Russia, for which he was not fitted and from which Sömmerring saved him by obtaining him for Munich.

Four years after Sömmerring came to Mainz he was instrumental in getting Forster there as librarian. Their intense friendship continued for a short time. With the beginning of the French Revolution their political views brought them to the parting of the ways. Forster sided with the French and entered the political field. Sömmerring was more conservative, and as a true German could not agree with his old friend. Forster drifted into political difficulties but died a natural death soon after the government had placed the price of 100 ducats on his head. Sömmerring in a letter to Heyne expresses the thought that Forster's early death on January 12, 1794, saved him from a worse fate.

It will be recalled that Sömmerring had contracted debts at Kassel as a result of his alchemistic activities. In 1787, in order to erase some of these debts he decided to sell his anatomical collection, which he succeeded in doing. The Kaiser's body-physician, Brambilla, bought it for the Academy of Wien for 400 ducats. He also asked Sömmerring for two other human skeletons which Sömmerring made for thirty ducats.

In March 1792, at the age of thirty-seven, Sömmerring married Margaretha Elisabetha Grunelius, a member of one of the first and the richest families in Frankfurt. While on his wedding trip to Wien he learned that the French had taken Mainz and he decided not to return there with his young wife. He therefore went to Frankfurt where they lived with his wife's people for the time being. He remained there during 1793, when the French moved to Frankfurt. In June, 1793, his son Detmar Wilhelm was born. He later became a much beloved physician of Frankfurt. During the next few years it was necessary for Sömmerring to go to Mainz for short periods but he never remained there longer than necessary. In 1794, he went to London where he received a call as a lecturer, but on his arrival there found conditions were not as expected and so returned home. In the summer of 1797, he was obliged to go to Mainz again. He found conditions there impossible and he begged for his release in order to enter the practice of medicine at Frankfurt. The release was granted after some hesitation.

Sömmerring was not primarily interested in the practice of medicine. His heart was still set on research and he made use of all his spare moments to complete some of the work he had started at Mainz. His artist stayed at his house and made the drawings. It was during this period that Sömmerring produced his best illustrated publications. One of these is the supplement to William Hunter's work on the pregnant uterus, entitled "Icones embryonum humanorum," 1797. Hunter's illustrations are of embryos of the second half of pregnancy only. Sömmerring, therefore, confined himself mainly to illustrations on the first half of pregnancy. Only two plates are given. Plate I consists of a series of sixteen embryos and Plate II of an embryo with and without its embryonic membranes.

Sömmerring was not satisfied with his early publication on the brain. In 1799 therefore, he published a new edition with better illustrations, entitled "Tabula baseos encephali." Wagner comments that these illustrations are beautifully reproduced and that they are much better than Vicq d'Azyr's and those accompanying his thesis, which looked flat and did not show depth. He criticized them, however, for the careless representation of the nerve roots. He also comments on the fact that Sömmerring never published a drawing on the internal configuration of the brain nor on the internal structure of an embryo.

The finest illustrations of Sömmerring, drawn by Koeck, are those of the special sense organs. His paper on the eye was published in 1801, on the ear in 1805, on voice and taste in 1806, and on smell in 1809. On the eye he prepared eight plates. The first plate presents a profile view of the eye. To him no existing picture of the external eye was accurate. He writes:

> Therefore I begged my artist to try his best to combine the greatest accuracy of individual details with the strongest retention of the whole; so that the finished product would produce the proper impression both from near and distant view . . . Truly, accurate sketching costs no more effort than incorrect! Does it not, for example, cost the same effort whether I picture the hair of the eyebrow slanting, as they lie in nature, or horizontal, as one finds them pictured so often?

Plate two pictures the details and general effect of the eye of a twenty-five year old woman during peaceful sleep. In his introduction to the plate he states: "The knowledge of the human eye is best obtained by following the natural order, of investigating the external first and then gradually passing to the internal structures." He fails to state in his text that this eye was that of his wife, which he had his artist draw secretly while she was asleep.

Besides these publications, Sömmerring's life in Frankfurt from 1797–1805 as practicing physician was an active one. In spite of his large practice he found time to do research in experimental medicine. The occasion for this was given by the stir which Jenner's cow-pox vaccination had at this time made throughout Germany. Jenner's first results were not entirely satisfactory and augmented by superstition aroused considerable opposition. This opposition was so common that when on one occasion a teacher asked the children; "Why was Moses hidden by his mother?" a small pupil replied, "Because his mother did not want him to be vaccinated." In the face of this opposition, Sömmerring together with Dr. Lehr took up the study of cow-pox vaccination and directed their special attention to the variolous test. Their account states:

> Fourteen vaccinated children were brought together to one place, and all inoculated on the same day with small-pox before witnesses. The small-pox matter was taken fresh from a child's pustules at the third day of their suppurative stage, and was inserted by lancet-puncture. The children were kept under observation and inspected from time to time by impartial witnesses. By the second or third day inflammation had arisen at the punctures in all of them and papular elevation could be felt; on the fourth day all the papulae had a zone of redness about a half of an inch around, and a little yellow fluid at their summits; on the fifth and sixth days eleven of the fourteen showed the papulas

become pustules, larger or smaller, filled with yellow matter, the remaining three cases having aborted from the papular stage; on the seventh day the redness began to decline and the pustules began to wither; and on the eighth day the redness had disappeared, and the pustules became covered with yellowish-brown semi-transparent crusts. No eruption followed.[1]

This translation is taken from Charles Creighton's book on "Jenner and Vaccination." "This," he says, "is one of the best recorded Variolus Tests in the whole literature of vaccination." Sömmerring does not state how soon after vaccination the test was applied. According to Prussian official reports it was always done on the eighth or tenth day after vaccination. Following these experiments critics were abundant. Several articles were published in the city making out that the new inoculation was being taken up by enterprising young doctors in order to introduce themselves into private practice, or to find a means of supplanting their old established but less progressive rivals. This, however, did not disturb Sömmerring. He was well satisfied with his experiments, and the doctrine of protection was established in Frankfurt.

In 1802, Mrs. Sömmerring died, having been married but ten years. Sömmerring had lived very happily with her and felt her loss keenly. Had it not been for his son and daughter, both less than nine years old, he would have gone to London to establish a practice there. But the children's relatives were all at Frankfurt and they wanted him to remain. He did remain and gave them the tenderest care that a father could bestow. Soon after Mrs. Sömmerring's death, he was confined to bed with inflammatory rheumatism from which he very slowly recovered. When he was better again he felt lonesome and his own house seemed to remind him of his misfortunes. His practice did not give him enough mental activity. His associations at Frankfurt continually called to his mind the grief which the death of his wife had brought to him. He therefore longed to get into a different atmosphere.

Many calls came to him during the following year from different educational institutions, but he was very cautious in accepting any of them. Early in 1805, however, he was made *Geheimrat* and member of the Academy of Munich. The Academy was new but there was great promise for progress in the near future. In this expectation, however, the members were disappointed partly on account of the management, but more so on account of the French Revolution. Besides his papers on the sense organs, Sömmerring wrote five papers during his first five years at Munich for which he received prizes. The first of these was on the "Structure and Function of the Lung" (1808). Reisseisen also wrote a paper on this subject. Both received the prize in Berlin. Sömmerring's second prize was received in Wien for a paper on the fatal diseases of the bladder and ureters in old men (1809). The other three papers which received prizes from Amsterdam were on the cause, diagnosis, and treatment of umbilical hernia (1811); on the fluid which is reimbibed by nerves (1811); and on the cause, diagnosis, and treatment of abdominal and inguinal hernia (1811). These papers practically closed his literary activity along anatomical lines, although he made many observations, especially in anthropology. Among the many skulls which he studied and measured was that of Theophrastus Paracelsus which Professor Aberle of Salsburg had produced for his study. Sömmerring noticed on this skull a fissure which he said was caused by some physical injury. Some time later he read in a book[2] that Paracelsus was thrown from a window, a fall which resulted in fatal injuries.

His studies at Munich, because of the lack of anatomical buildings and bodies for dissection, were centered on physical, electrical, paleontological, and astronomical subjects. In 1809, he presented at the meeting of the Academy two papers. One was on the galvanic telegraph, which he also demonstrated. This construction was also presented to Napoleon I who remarked, "C'est une idée germanique."

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[1] *Med. Chirurg. Zeitung.*, July 23, 1801.

[2] Ed. Joh. Hessling Theophrastus Redivivus. Zoffingen und Hamburg, 1663.

The war between France and Austria in 1809 gave rise to Sömmerring's discovery. On the 9th of April, 1809, the Austrian troops crossed the River Inn, and on the 16th occupied Munich, whence King Maximilian had fled on hearing of their approach. The Emperor Napoleon, having speedy intelligence of this move by Choppe's semaphore, hastened away with troops, and so rapid and unexpected were his movements, that in less than a week the Austrians were obliged to retire, and on the 25th Maximilian reentered the capital.

This event in which Choppe's semaphore played so important a part caused much attention to be directed to the subject of telegraphy, and on the 5th of July following we find the Bavarian minister, Montgelas, requesting his friend, Dr. Sömmerring, to bring the subject before the Academy of Science (of Munich) of which he was a distinguished member.

Sömmerring at once gave the matter his attention and in three days had constructed his first five-wire telegraph. He soon reconstructed this into the thirty-five-wire telegraph. Apparatus D in the illustration is an apparatus for attracting attention at the distant station, which he perfected on August 23, 1810. He made the gas, rising in small bubbles from two contiguous pins in the water, collect under a sort of inverted glass spoon at the end of a long lever, which rising made a second lever bent in the opposite direction on the same axle descend and throw off a little perforated leaden ball resting lightly on it, and which falling on an escapement, set the clock work of an ordinary alarm, D, in motion. This arrangement, simple as it is, gave Sömmerring much trouble. He writes in his diary, "If the principal part of the telegraph gave me no trouble, and demanded no alteration, but was ready in a few days, this secondary object, the alarum, cost me a great deal of reflection, and many useless trials with wheelwork, till at last, I hit upon this very simple arrangement." The telegraph, however, was not practical since it operated only in short distances.

The second of these papers was on the evaporation of alcohol through animal membranes. These observations he continued and the results were presented in a series of memorials, the last of which appeared as late as 1824. He discovered that if new wine were enclosed in a dry animal bladder it would within a short time obtain the quality of old wine. This principle was made use of in obtaining absolute alcohol. He showed that alcohol could be made almost water-free by enclosing it in a dry beef bladder hung over a hot sand bath. The water will evaporate through the membranes more rapidly than the alcohol. He also showed that in the distillation the lightest and most specific part of the alcohol is given off last.

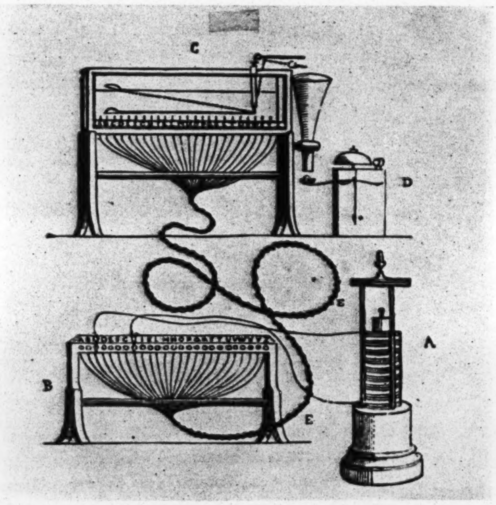

Fig. 1. Samuel Thomas von Sömmerring's Telegraph.

Sömmerring also continued to add to his museum. Many of the specimens which he collected were fossils which had always interested him greatly and on which he published a series of papers. When he left Munich in 1820, his collections numbered

2,287 preparations; 660 of these were preserved in fluid and 1,627 were dry.

Astronomical studies also occupied some of his time, but it was not until the last few years of his life that this field completely occupied his scientific endeavors. Optical instruments had a fascination for him. At Munich he became intimately acquainted with Fraunhofer, who constructed a small apparatus which Sömmerring had invented for sketching microscopic objects. This was known as the "Sömmerringsche Spiegelschen." This is the first camera lucida on record. The astronomical instruments which Fraunhofer had invented were highly prized by Sömmerring, and he used one of them in the study of sun spots until shortly before his death.

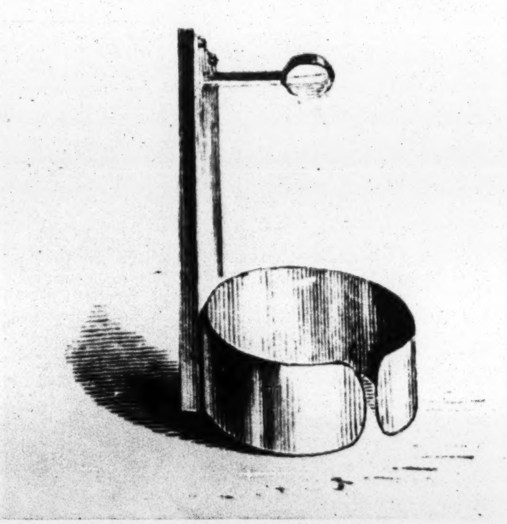

Fig. 2. Samuel Thomas von Sömmerring's Camera Lucida.

Sömmerring's life at Munich was not as pleasant as his early life at Mainz nor as productive as at Frankfurt. That he had determined to do his best, however, and no doubt did, may be learned from one of the first items in his diary which he started with the New Year of 1804. On January 28, 1804, he writes, "I entered my fiftieth year with the earnest determination to be better, calmer, more discrete, milder, more decent, to work more constantly, live cheaper, to stop chair-sleeping, and keep myself from getting into a rage." The French Revolution decreased the effectiveness of the Academy considerably. In his letters to Heyne he states that he tried to keep at his work as much as possible because, if he allowed himself to discuss the war conditions he became so enraged that he was unable to work. To Heyne he also wrote a most sarcastic description of Napoleon Bonaparte after he had seen him for the first time at Munich. Most of the people of Munich favored Napoleon and Sömmerring, who was a true German, had only a few friends who thought as he did. He, therefore, often felt lonesome and stated so in his letters to Heyne.

After the freshness of the revolution had worn off, things went better with him. He was still active writing reviews for the *Göttingsche Anzeiger*. Scientific societies showed their appreciation of his efforts and he became a member of almost all of them. In 1808, he was received into the rank of nobility, and in 1818, he received a similar honor from Russia.

In 1812, his closest friend, Professor Heyne of Göttingen, died. In the same year his only brother died. These losses he felt very keenly and they almost disheartened him. After Heyne's death his letters to Ebel became more numerous. During the next eight years many of his old scientific friends with whom he had been in almost constant contact died and he felt his interest in life slipping more and more. He, too, at times felt the pressure of age overpowering his strength. The cold climate of Munich did not suit him and he longed for rest. In 1820, he resigned his position at Munich and returned to Frankfurt to spend his last years with his children, both of whom lived there. Through correspondence he remained in contact with the activities of the Academy, and with his friends. Anatomists, physiologists, and scientists never missed an opportunity to visit Sömmerring whenever it was possible for them, and it was with exceptional pride that he welcomed them. He was not idle during these last years, but whatever time he did not use for scientific study and the observation of sun spots with a Fraunhofer instrument, he gave to his children, relatives and visitors. Sömmerring's correspondence was not limited to Europe, and the following letter shows that he was recognized as an anatomical authority by such American scientists as Caspar Wistar.

The following is a copy of a letter from von Sömmerring to Dr. Caspar Wistar:

München 19th June, 1817

Dear Sir:

Your benevolent opinion about my literary character expressed as well in your excellent System of Anatomy as in your friendly letter, gives me the greatest pleasure and makes me wish to be able to express the feelings of my gratitude.

The present of your work (received 17th June, 1817, by my excellent friend A. G. Camper) is the more agreeable as I hardly would have been fortunate enough to get it in any other way.

The neat specimens of the os Sphenoideum and Ethmoideum are invaluable additions to my anatomical collection having never seen them myself in fresh or preserved state. I shall now be very attentive to examine these processes of the ethmoid bone in children of two years age, being fully persuaded Mr. Bertin had never met with them of such a considerable size nor of such a peculiar structure.

Not knowing which of my publications are already in your possession, or whether you read German or which way I could the best oversend them, in return of your liberality I hope for information.

Thankfully your friend and servant,
S. Th. von Sömmerring,
Privy Counsellor to H. M. K. of B.

I am preparing an account of your work for the *Göttingsche Gelehrte Anzeiger*.

On April 7, 1828, fifty years after he had received his doctor's degree, scientists and friends from all parts of Europe extended to him greetings either by their presence or through the mail, and all Frankfurt was in festive array. Soon after this event he confided to his son that nothing was lacking but a mild death in order to have lived in perfect happiness on this earth. During the cold winter of 1829, he continued to observe sun spots from an open window for half an hour at a time. In this way he contracted a number of colds which each time left him in a weaker condition. On December 29, 1829, he made his last observations with the remark that he would not see the sun much longer. In spite of digestive disturbances and continual loss of strength he was happy and seemed well and often stated that he felt well. On February 4, 1830, he wrote his last letter to Döllinger, his successor at the Academy of Munich. On February 25 he ended his diary, which he had kept since 1804, with his own signature in large letters and handed it back with the words: "This is the last that I shall write." On March 3, 1830, five days later, while the sun was shining brightly at noonday, his wish that he might depart from this life without struggle was fulfilled.

What Sömmerring was and what he meant to Europe was recognized even before his death, and was best demonstrated at the celebration of the fiftieth anniversary of his doctorate, when statesmen and representatives from the universities of Germany came to Frankfurt and hundreds of scientists wrote letters of congratulations and sent presents in order to show their appreciation of his contribution to mankind. Eleven of his scientific friends dedicated publications to him on this day. Kretzschmar and Temminck named curious natural products after him. Martius, who had just returned from South America, named a légume which he had discovered there "Sömmerringia semperflorens" in honor of him. As a matter of fact almost all Germany entered this celebration, in that hundreds of Germans and even foreigners, doctors, educated men and statesmen, united to have a medallion cast which had on the one side a picture of Sömmerring and on the other the base of the brain. In Frankfurt this celebration was entered with great enthusiasm and the Senkenbergische Naturforschende Gesellschaft established a fund in honor of him, as a charter member, for a prize known as the *Sömmerringische* prize. This prize was to be given once in four years to that German who during the four years had given the greatest impetus to physiology. The purpose of this prize truly expresses the position of Sömmerring's value. The individual products of his thought and observations have not all stood the test of more critical observation and experimentation, made possible by the use of the microscope and electrical appliances, but they have fulfilled the desire, which he expressed in the preface of his anatomical handbook, that they should stand as a basis upon which others could build.

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[3] The works by Sömmerring are from the library of Dr. William Snow Miller, Madison, Wisconsin.

WILLIAM MAXWELL WOOD (1809–1880)

THE FIRST SURGEON-GENERAL OF THE UNITED STATES NAVY

By W. M. KERR

LIEUT. COMMANDER, MEDICAL CORPS, U.S.N.

THE motive that inspires most men to study history, it has been said, is the desire to feel the reality of life in bygone times, which, in the final analysis, was in many respects quite like life today. The story of any more or less remote period is a tale of real people. As we delve into the past and become absorbed in the dusty records of the dead, they take form and color, and exhibit passion and thought, thus enabling us to see our forerunners as they lived, each intent on the business of a long-vanished day. Each one in his commonest goings and comings was ruled by a complicated and ever shifting fabric of custom and law, society and politics, and events at home and abroad. There is a fascination in the reconstruction, bit by bit, of the mosaic of the long-forgotten past which inspires the antiquarian and the historian alike to glance backward along a course of events that has long passed from memory and to probe into the true nature of men who were here before us. Such a fascination has prompted the preparation of this sketch of one who once wore the uniform of a medical officer of the United States Navy and whose service brought him in contact with many incidents of importance in naval history.

William Maxwell Wood was born in Baltimore, May 27, 1809. He was appointed an assistant surgeon in the Navy on May 16, 1829, became a passed assistant surgeon, January 1, 1835 and was commissioned surgeon on February 20, 1838. He served at sea in the days when the Navy was making a successful effort to eradicate piracy from the West Indies and an unsuccessful attempt to enforce the laws relative to the suppression of the slave trade.

He served on the coast of Florida during the Seminole War, was appointed fleet surgeon of the Pacific squadron in 1843 and by a strange stroke of fortune was instrumental in getting the first intelligence of the outbreak of war between the United States and Mexico to Commodore Sloat, who was then at Mazatlan. The Commodore was thus enabled to proceed with his squadron to California, seize Monterey, the capitol of that distant province, and begin the operations which resulted in California becoming American territory. He was fleet surgeon of the East Indian Squadron from 1856 to 1858 and was present at the capture of the Barrier Forts at the mouth of the Pearl River in China. He was fleet surgeon of the North Atlantic Blockading Squadron from 1861–1864, and was present at the capture of the forts at Hatteras Inlet August 28, 1861; in the engagements with the Merrimac, March 8–9, 1862; at the capture of Sewall's Point and Norfolk in May, 1862; in the sounds of North Carolina in 1863 and on blockade and other operations on the coast from that year until 1865. On July 1, 1869, he was appointed Chief of the Bureau of Medicine and Surgery, an office he held until October 24, 1871, though he was placed on the retired list for age on May 27, 1871.

Dr. Wood was a prolific writer. His most important contributions to the literature of his time include "Wandering Sketches of People and Things in South America, Polynesia, California and other Places Visited During a Cruise in the U. S. Ships Levant, Portsmouth, and Savannah"[1]; "A Shoulder to the Wheel of Progress"[2]; "Hints to the People on the Profession of Medicine"[3]; and "Fankwei, or the San Jacinto in the Seas of India, China and Japan."[4]

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[1] Phila., 1849.

[2] New York, 1849.

[3] Buffalo, 1852.

After his retirement from active service he made his home in Owing's Mills, Baltimore County, Maryland, where he died on March 1, 1880.

Dr. Wood's first duty was performed at the United States Naval Station, Pensacola, Florida, then recently established, where he remained until May 19, 1831, on which date he joined the U. S. S. Grampus, serving on her in the West Indies until September, 1833.

After a tour of shore duty at the naval station at Baltimore, he joined the frigate North Carolina, but had been on that vessel only a few weeks when he was detached and ordered to the Independence, then on the Brazil station engaged in the suppression of the slave traffic. Returning to the United States in April, 1839, he was ordered to the Poinsett, on which he served in Florida during part of the Seminole War.

This vessel had been acquired from the Army and fitted out at Baltimore in the spring of 1839 under Isaac Mayo, Commander, U.S.N. She was designed to be the flagship of the "Expedition for the Suppression of Indian Hostilities on the Coast of Florida" and was one of the first steam vessels employed in the Navy, a small paddle wheel steamer burning wood. After a trial trip on Chesapeake Bay to test her engines, the Poinsett proceeded to Norfolk for the installation of her armament. She arrived at the Gosport Navy Yard, as the naval station at Norfolk was then called, on June 17, 1839.

On June 26, 1839, the Poinsett left the navy yard and proceeded to sea. Her destination was Key Biscayne on the eastern coast of Florida, where Commander Mayo believed he could best cooperate with the land forces under General Zachary Taylor and prevent the smuggling of arms and supplies to the Indians from Cuba. However, at this time the little vessel did not get very far on her voyage to the Florida War as appears from the following letter which indicates an early engineering problem, that of obtaining fuel.

U. S. Steamer Poinsett,
Norfolk, June 30, 1839

Hon. J. K. Paulding,
Secretary of the Navy.
Sir:

I have the honor to inform you that I was compelled to return to this port last night. After taking my departure we had a fresh wind ahead but after doubling Cape Hatteras it came on to blow very fresh. Every exertion was made to get into Ocracoke Inlet where I intended to replenish the fuel which was then getting short. The pilot concluded that we should be too late to get in that night and that from the appearance of the weather it would be dangerous to remain off. It was then blowing a fresh gale from the south, and having Hatteras shoals under my lee, I stood off to get clear of them. I had just effected it when it came on to blow so fresh that we could make little or no headway, and one of the sponsons[5] having sprung a leak it could only be kept free by continual bailing with buckets. The wind increased to a gale and I stood before it to the northward. At five o'clock A.M. Saturday the gale abated, when I found we had not a sufficient quantity of fuel to reach any port south of us, and was compelled to burn the planks and all the spare articles on board, also a barrel of tallow which brought us to Cape Henry. There the steam packet South Carolina kindly furnished us with wood. Our own carpenters this morning repaired the sponson. It being Sunday I cannot procure fuel but will have it on board early tomorrow morning when I shall proceed immediately to sea . . .

I. Mayo.

On July 15, 1839, the Poinsett arrived at Jacksonville. Here wood and water were taken on board and the vessel proceeded to St. Augustine where wood was scarce, although obtainable. Key Biscayne was reached on July 22, 1839, and the crew began their never ending task of collecting fuel. "The difficulty of obtaining wood", writes Commander Mayo, "is very great, my own men being compelled to cut and carry it on their shoulders over a rough road some distance and boat it down the Miami five or six miles in small boats." From this place the vessel made short cruises along the coast, at one time going to the western coast of Florida to investigate a massacre which had occurred on the Caloosahatchee River.

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[4] New York, 1859.

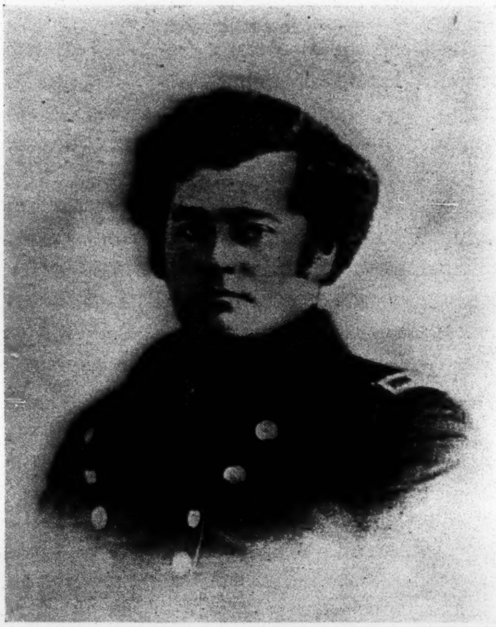
[5] This was the space forward and abaft the paddle-boxes designed to increase the stability of the vessel. Sponsons were made sometimes open, sometimes closed, depending upon the roughness of the water into which the vessel was to run.

On one of these cruises some boat crews were left on Indian Key in charge of a midshipman. When the Poinsett returned to that locality it was found that yellow fever had occurred among the party. Dr. Wood established a hospital on shore for the treatment of the sick and the Poinsett sailed away in order to avoid the contagion. After the departure of the vessel the infection spread among the officers and attendants at the hospital. Both Dr. Wood and the junior medical officer contracted the disease.

The Poinsett does not appear to have been a satisfactory vessel for the duty to which she was assigned. Much time was spent in getting fuel and her machinery was often out of order. Because of the necessity of repairing the engines she was ordered north, arriving at the Norfolk Navy Yard on December 20, 1839.

Dr. Wood remained on board until March 17, 1840, when, after six months' leave, he was ordered to the U. S. S. Columbia, a vessel of 1726 tons displacement, carrying forty-four guns, launched in 1836. He remained attached to this vessel until January 18, 1842, when he was detached and ordered once more to the U. S. Naval Station at Baltimore. He was on duty at this station until he joined the U.S.S. Levant, April 27, 1843, for service in the Pacific.

Dr. Wood joined the Levant at Norfolk, Virginia, at a time, as he once wrote, "when our peaceful relations with foreign powers threatened to be disturbed. Oregon and Texas were the apples of discord, our great mother over the ocean and our great republican neighbor being our threatened competitors." The story of his cruise to the Pacific is delightfully told in his "Wandering Sketches of People and Things in South America, Polynesia, California and Other Places Visited During a Cruise on board of the U. S. Ships Levant, Portsmouth and Savannah." The Levant left Norfolk in the fall of 1843. "Provisions all in, chickens cooped, pigs and sheep penned, the ship 'took the bone in her mouth' and walked away from home to other scenes and climes," and, after "a patience-wearing passage of seventy days," arrived at Rio de Janeiro, then capital of the Empire of Brazil.



William Maxwell Wood,
Fleet Surgeon Pacific Squadron

FIG. 1. DR. WOOD AS HE APPEARED WHEN FLEET SURGEON OF THE PACIFIC SQUADRON AND HIS AUTOGRAPH.

The vessel had a comfortable passage around Cape Horn and late in January, 1844, after a short sojourn at Valparaiso, in Chile, came to anchor in the harbor of Callao, the principal seaport of Peru, where the ships composing the Pacific Squadron were at anchor. Here Dr. Wood was detached from the Levant and joined the Savannah as Fleet Surgeon.

As the squadron was to remain at Callao some months, Dr. Wood secured an abode on shore and began to perfect his knowledge of the Spanish language in which he had acquired some proficiency in Florida during the Seminole War and which later was to be of great use to him.

In the "Wandering Sketches" he has recorded his impressions of Peru as it was at the time of his visit. The colonial Spanish architecture of the buildings in Lima and Callao, the customs and costumes of the people, the street scenes, the bull fights, the lottery, the market place, the religious processions and his rambles in the country, especially his visit to the temple of Pachacamac (about twenty miles from Lima) were interesting subjects for his notebook.

From Peru the Savannah sailed for the Marquesas. In eighteen days "the fair and gentle breezes of this region" brought the vessel to the Island of Nukahiva. The doctor writes:

> Coming from the barren and monotonous shores of Peru the contrasted scenery of these volcanic islands is peculiarly impressive. They present precipitous and jagged walls to the ocean, which surges around them; or rise into lofty mountains, whose sides are luxuriant in verdure, or broken into ravines and valleys, shaded by the dark foliage of the bread-fruit, or the curving leaves of the cocoanut.

The Savannah remained at Nukahiva sufficiently long for the officers to become familiar with the scenes and warlike natives of that island which Herman Melville has described in "Typee, a Peep at Polynesian Life," a book which proved a great literary success on its publication in 1846 and which is such an excellent portrayal of life as it used to be in the South Seas, that even today it enjoys a certain degree of popularity.

On the morning of August 16, 1844, the vessel left Nukahiva and after two weeks of pleasant sailing dropped anchor before the little settlement of Hilo on the Island of Hawaii where she remained two weeks, thus affording the officers an opportunity to ascend the volcano of Kilauea. The trip was made on foot and occupied five days. Those who have visited Hilo in recent years and have made the ascent of Kilauea in a few hours by means of a high-powered automobile gliding over a smooth road might enjoy the contrast presented by Dr. Wood's entertaining description of this pedestrian tour, but limited space precludes its quotation in this paper.

Leaving Hilo, the Savannah visited Honolulu where after a short sojourn persistent rumors of impending war between the United States and Mexico influenced the Commodore to direct the departure of the vessel for California.

It was on Thursday, October 3rd, 1844, that the Savannah left Honolulu for the coast of California. A few days sailing exchanged the equable trade winds and warm temperature of the tropics for the cool weather of more northern latitudes. This change was not disagreeable to the officers, as it relieved the lassitude and relaxation resulting from long continued sultriness and enabled them to enjoy the privacy of their staterooms from which they had long been kept by the close and heated atmosphere.

On the evening of the twenty-third day at sea, the vessel was hove-to about forty miles to the northward of Monterey because of a dense fog. Three days were passed in this manner, somewhat impatiently, for all on board were most anxious to be assured of the truth of the rumors which had caused the departure of the ship from Honolulu. The occupation of California was in the minds of all on board and its annexation was deemed not unlikely.

Referring to the annexation of Mexican territory on the Pacific Coast Dr. Wood says:[6]

> At the risk of being called a disciple of the "manifest destiny" principle, I will venture the opinion, that this event was bound to occur and, as the best physician is but the watcher and guide of nature, administrations are to be

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[6] Wood, W. M. Wandering Sketches.

judged as they judiciously conform themselves to, or wilfully attempt to thwart the principles which are controlling the world's advance and destiny.

In support of the foregoing view, and to show that Californian annexation was a thing of slow and steady growth, foreseen and predicted by statesmen, I will quote the following remarks of Mr. Huskisson, made in the British House of Commons so far back as 1830:

> If the United States have declared that they cannot allow the island of Cuba to belong to any maritime power in Europe, Spain excepted, neither can England, as the first of those maritime powers, suffer the United States to bring under their dominion a greater portion of the shores of the Gulf of Mexico than that which they now possess. Within the last twenty-seven years they have become masters of all the shores of that Gulf, from the point of Florida to the river Sabine, including the mouths of the Mississippi and of other great rivers, the port of New Orleans and the valuable and secure harbors of Florida; and within these few days, we hear of their intention of forming a naval station and arsenal at the islands of the Dry Tortugas, a commanding position in the Gulf-stream between Florida and Cuba.
>
> With all this extent of coast and islands, we know, further, that designs are entertained and daily acted upon—I will not say by the present government of the United States, but notoriously by the people—to get possession of the fertile and extensive Mexican province of Texas. To borrow an expression of a deceased statesman of that country, "the whole people of America have their eye" upon that province. They look to all the country between the river Sabine and the river Bravo del Norte, as a territory that must, ere long, belong to their Union. They have also, I believe, that same eye upon some of the western coast of Mexico and valuable ports in the Gulf of California. Should they obtain these districts, the independence of Mexico, I will venture to say, will be no better or more secure than that of the Creek Indians, or any other Indian tribe now living within the circle of the present recognized limits of the United States; and the Gulf of Mexico will become as much a part of their waters, as the Black Sea was once the waters of Turkey, or as the channel which separates England from Ireland may be considered as part of the waters of the United Kingdom.
>
> That a war arising out of these pretensions may one day occur, is, perhaps, but too probable. The progress which the United States have already made towards the attainment of objects so manifestly within their contemplation, calls us not to regard that contingency as one which provident statesmen may sanely dismiss from their minds.

For many years before California was annexed the impression seemed to exist in the United States Pacific squadron, that its most important purpose was to occupy California and its vigilance was directed to the accomplishment of such a duty. The British squadron seemed to have an equally strong idea that its business was to prevent any such act upon the part of ours and, consequently, these squadrons went about watching each other. It is difficult for those who live at home, in reach of regular mails, railroads and telegraphs, to conceive the difficulties of the commander of a foreign squadron under such circumstances. War between his own and another country might exist for months before it reached him as a rumor and long before it reached him officially and it might reach the commanding officer of another squadron of opposing interests first.

To act upon rumor might be to commit a great wrong; to wait for official information might be a fatal delay.

Commodore Thomas ap Catesby Jones[7] took California in 1843, upon rumor, and that he acted upon rumor is some evidence that California was expected to be taken by his government; he acted upon almost as much authority as did Commodore Sloat when he took it in 1846; and had Commodore Sloat delayed for further information, if the protection of the British flag had been thrown over the territory, its acquisition by us would have been under greater difficulties and at the cost of more blood.

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[7] Thomas ap Catesby Jones was born in Virginia in 1787 and died in 1858. Soon after his entry into the Navy in 1805, he was employed in suppressing piracy in the Gulf of Mexico. In the War of 1812, at the Battle of New Orleans, with five small gunboats he attempted to bar the passage across Lake Borgne to Vice Admiral Cochrane and his fleet. In this encounter with the British his vessels were captured and he was seriously injured. While in command of the Pacific Squadron in 1842, he heard rumors of the declaration of war between Mexico and the United States and fearing from the actions of the British frigate Dublin that the British government intended to annex California, he landed at Monterey and took possession in the name of the United States. Because of this imprudent act he was removed from his command.

In the fall of 1844, we lay in the harbor of Monterey, ready to take California upon the first intelligence justifying it; in 1845 we did the same thing and in 1846 it was taken. Now considering Mr. Huskisson's prophecy in 1830 and the action of the American and British squadrons for years before the final annexation, I take it that this event was decreed long before the administration under which it was accomplished was thought of.

On October 30, 1844, the Savannah came to anchor in the harbor of Monterey, where she remained until the middle of December. Dr. Wood's description of the primitive life of the American settlers in the region about Monterey and the *dulce far niente* existence of the Mexican inhabitants is vivid. His knowledge of the Spanish language enabled him to enter into pleasant social relations with the people of the town and to form an estimate of the political situation which was extremely useful to his commanding officer. He was taken on a hunting expedition into the "back country" where he was afforded a glimpse of Californian ranch life and he spent some days at the old Franciscan mission of San Juan Bautista.

Leaving Monterey on December 15, 1844, and sailing South, the Savannah arrived on the morning of January 3, 1845, at Mazatlan, then a thriving Mexican town.

The vessel remained here, however, only four days but she returned on the 15th of October, 1845, with her officers anxious to obtain information as to the question of peace and war between the United States and Mexico. Learning that the relations were still harmonious the Commodore departed for Acapulco where he hoped to obtain more recent information, as that port is within two hundred miles of the City of Mexico. The Savannah reached Acapulco on the 27th of October. Here Dr. Wood, as was his custom, hired a room ashore in order to escape the monotony of existence aboard ship and to come more closely in contact with the inhabitants of the town. He now spoke Spanish fluently and derived a great deal of pleasure from his conversations with chance acquaintances and acquired considerable knowledge of political affairs.

At this time the Californians, who had been successful in a minor revolution against Mexican authority in their territory, were threatened with invasion by an expedition which was fitting out in Acapulco. The Mexican papers were full of references to this expedition; money was appropriated for it and General Iniestra appointed to its command. "Could the Californians have seen the condition of this expedition in Acapulco," Dr. Wood writes, "they would have felt no anxiety in regard to it."

Two vessels chartered by the Mexican government had been lying in the harbor for three months awaiting the arrival of troops from the interior which they were to transport to California, but only a few officers, some French mechanics and a small portion of the stores in wretched condition had arrived. The Frenchmen and the crews of the vessels soon succumbed to "a fatal fever" then prevalent in Acapulco and it was plain to all that the expedition would never leave port. Dr. Wood's association with the officers of this farcical expedition and with the inhabitants of Acapulco was of the most friendly character, although each mail was expected to bring intelligence which would convert them into enemies.

After remaining nearly a month at Acapulco the Savannah left for the north. The new year found her once more at Mazatlan, where she was destined to remain some time and where a large assemblage of the armed ships of Great Britain awaited the turn of the tide of events. Political affairs were decidedly unsettled. "In addition to the uncertainty of our relations with Mexico," writes Dr. Wood, "it was very doubtful at this time what they might be with Great Britain."

Prior to the Mexican War, the Mexican Government was considerably in the debt of Englishmen who had invested in Mexican securities. The payment of the interest and principal of these investments, owing to the disturbed state of Mexican affairs and the disordered condition of the finances of Mexico, seemed to be doubtful. The British Government, ever ready to take a paternal interest in the affairs of her citizens who are likely to suffer loss through foreign powers, is said to have proposed to the Mexican Government that it should mortgage California to Great Britain as security for the bonds held by British subjects. Furthermore, it was suggested that Great Britain be put in possession of the territory mortgaged. England would thus have been mistress of the situation. She could assume the payment of the bonds, release Mexico from her indebtedness, convert the mortgage into a fee-simple, as the lawyers would say, and so become owner of California upon most advantageous terms.

It was because of this proposal that the British squadron had gathered at Mazatlan and as communication was difficult in those days the British Admiral had made careful arrangements to secure, at the earliest possible moment, information of any change in the political situation. While negotiations between Great Britain and Mexico were pending, however, the declaration of war against Mexico by the United States put a stop to the proceeding.

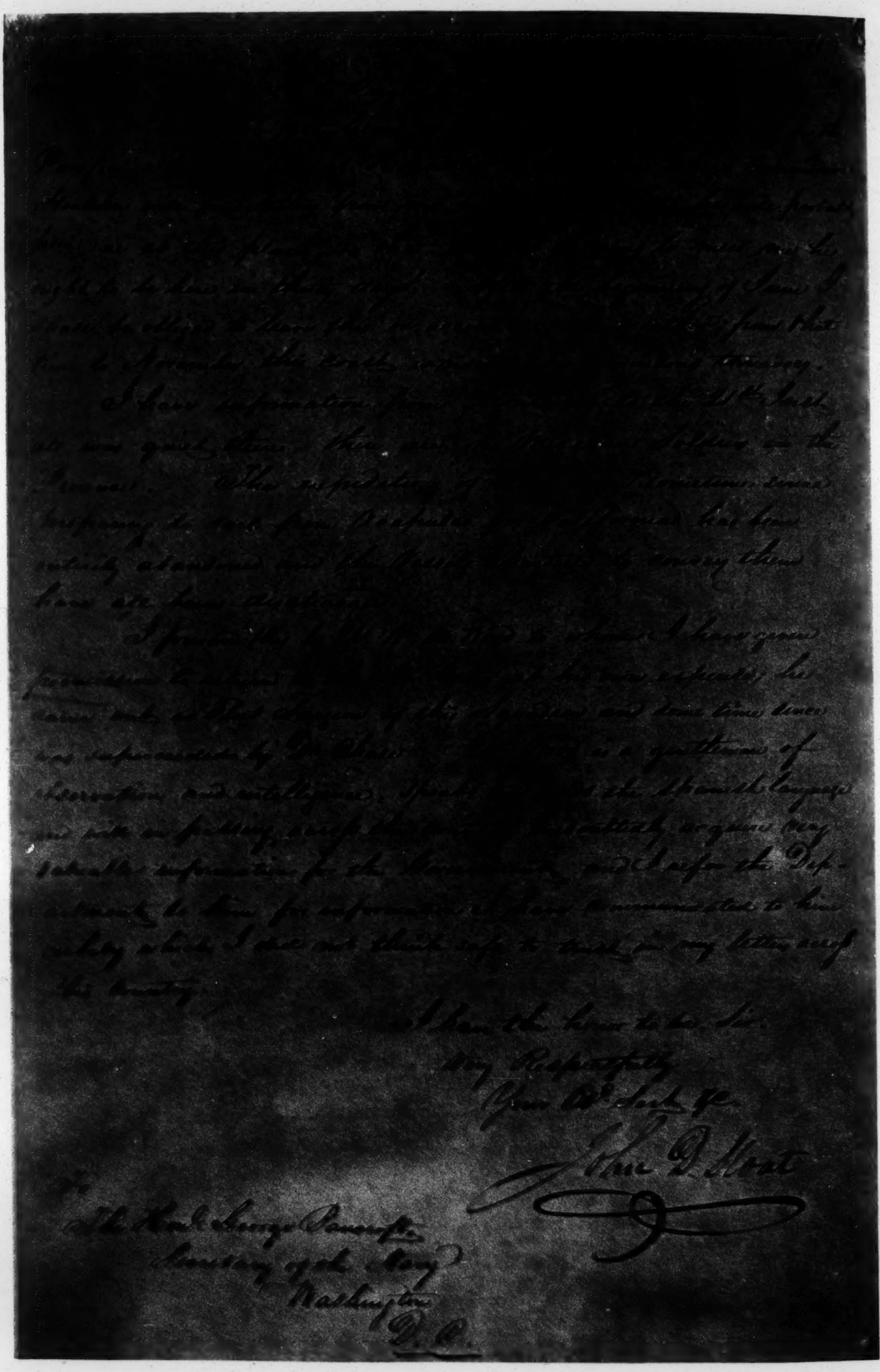
The news came slowly to the assembled vessels at Mazatlan. Had it not been for an incident in the career of William Maxwell Wood word of the outbreak of hostilities might have been received by the British commander in time to have permitted him to sail up the coast and take possession of California for the benefit of the British holders of Mexican bonds. However, the information came first to Commodore Sloat through the instrumentality of his fleet surgeon.

Dr. Wood's term of sea service having expired and his relief having reported for duty on board the Savannah, he was given permission in April, 1846, to return to the United States at his own expense.

Relying on his intimate knowledge of the Spanish language to extricate him from any difficulties he might get into, he decided to journey across Mexico from the small port of San Blas, situated a little to the south of Mazatlan, to Vera Cruz, where he hoped to secure passage on some vessel bound for the United States. He was accompanied by a Mr. Parrott, United States consul at Mazatlan, who was also on his way home. The two gentlemen with some companions made the short passage from Mazatlan to San Blas on the U. S. S. Warren. There being some fear that official dispatches sent through Mexico by mail might be intercepted, on the departure of Dr. Wood from the flagship, Commodore Sloat entrusted him with a letter to the Hon. George Bancroft, then Secretary of the Navy, concerning affairs of the squadron together with certain verbal advices, the nature of which was too confidential to commit to writing. The commodore also directed the doctor to forward to the flagship any information of importance he might gather upon his journey to the Atlantic. Dr. Wood and Mr. Parrott left San Blas on the morning of May 4, 1846.

When they reached Guadalajara they found the city in a state of great excitement as news had just arrived of a successful attack upon the American forces on the Rio Grande and the capture of some dragoons. Dr. Wood wrote:

> In every respect this was bad news, mortifying to our national pride and inducing painful apprehensions for the fate of our captured countrymen. Whilst every Mexican exultation was an insult, we dare not open our lips and point to the cowardly nature of the attack, as shown in their own narrative. Besides such considerations, our own position was a cause of much anxiety. Here was war, and we in the center of the country; I with a hostile uniform in my trunk, and dispatches in my cap, which unfortunately stated that one object of my journey through the country was to collect information in relation to expected hostilities.
>
> What was to be done was a serious question. I had no disposition to be placed in the position



[illegible]

right to be here in these [illegible] of them I

[illegible] from that

time to November [illegible]

I have information from [illegible] 11th last

all was quiet there [illegible] Soldiers in the

Province. The expedition of [illegible]

[illegible] from Acapulco [illegible] has been

entirely abandoned and the [illegible] money there

[illegible]

I forward [illegible] to whom I have given

permission to return [illegible] his own [illegible] he

acted as [illegible] of this Squadron and some time since

was superseded by Dr. [illegible] is a gentleman of

observation and intelligence, speaks [illegible] the Spanish language

[illegible] very

valuable information for the Government, and I refer the Dep-

artment to him for information [illegible] communicated to him

verbally which I did not think safe to trust in my letters out of

this country.

I have the honor to be, Sir,

Very Respectfully

Your Obt. Servt. &c.

John D. Sloat

To

The Honl. George Bancroft

Secretary of the Navy

Washington

D.C.

Fig. 2. Last Page of the Letter to the Secretary of the Navy Which Commodore Sloat Gave to Dr. Wood on His Departure from Mazatlan.

of a spy, in an enemy's country; and yet, to avoid being in such a position, I should at once surrender myself to the authorities. By pursuing this course, I would be compelled to surrender, or destroy the dispatches with which I was charged, and, what was worse, would lose an opportunity of communicating the state of affairs to the commander-in-chief in the Pacific. The condition of things left by us on the western coast, seemed to demand that such an opportunity should not be lost. Whether correctly or not, it was believed, that in case of war, the British squadron would attempt to take California under its protection. At the time we left Mazatlan, there were at anchor off that port, the Collingwood, an 80 gun ship, Admiral Seymour; the Talbot, 26 guns; the Spy, three large guns, one 42, two 32; the Frolic, sixteen 24-pounders, was at Guaymas; the frigate Juno entered as I was coming out; the steamers Cormorant and Salamander were on the station; the frigate Fiseyard, 36; and the corvette Modesta were in California and Oregon. The American, 54, has been ordered back from Valparaiso, and the frigates Grampus and Carysfort were in the Pacific, direct from England. The concentration of so large a force in a part of the ocean where, heretofore, the British rarely had more than one vessel, looked suspicious, and hence it became imperative that the commander of our forces should have the earliest intelligence of the war.

Accordingly, the doctor wrote a report of the intelligence he had received and was fortunate in securing a messenger willing to carry it to Mazatlan with all the speed possible. This courier went through the country safely, covering the distance in five days, which at that period ordinarily required ten days of arduous travel on horseback, and on the 17th of May delivered the first news of the war to the American forces in the Pacific.

Commodore Sloat when he received Dr. Wood's message sailed immediately for the Californian coast. He arrived at Monterey, July 7, 1846, occupied the town, hoisted the American flag and took formal possession of California.

A few days after the departure of the United States Pacific Fleet from Mazatlan, the British Admiral received information similar to that which Dr. Wood had forwarded to Commodore Sloat. The Admiral instantly fathomed the intentions of the Commodore, and without delay proceeded north, probably with similar intentions and with the hope of outsailing the American ships. The Savannah was a speedy vessel and being driven with all sail the Admiral did not succeed in overtaking her. When he reached Monterey he found the American forces in possession. If it was his intention to seize California, we may readily imagine that he was deeply chagrined at being outwitted, especially as he had prided himself on the perfection of his arrangements for securing early information.

Leaving Guadalajara, Dr. Wood and Mr. Parrott continued on their journey and after sundry adventures reached the city of Mexico. Here they heard of the battles of Palo Alto and Resaca de la Palma and noted that the public feeling was even greater than it had been at Guadalajara. Dr. Wood's position in the capital of Mexico was extremely critical. As an American officer surrounded by the embittered people of a hostile nation, bearing dispatches to the enemy, having availed himself of the opportunity furnished by his journey to transmit important information to the commander of the American forces in the Pacific, he was liable to apprehension by the Mexican authorities at any moment. Nevertheless he showed no fear and continued to secure what information he could of the condition and resources of Mexico.

He was fortunate in meeting a Mexican official whom he had known in Acapulco and from whom he learned much concerning the affairs of Mexico. Having obtained this information he incorporated it together with an account of his journey and what he had done, in a letter addressed to the Secretary of the Navy. He enclosed this in a package sent through the Mexican mails to a German acquaintance in Vera Cruz with the request that, if the letter were not called for in a few days, it be sent out to one of the American ships which he believed to be then lying off the harbor of that city. He took this precaution in order that, in the event of his arrest or death, the United States government might possess the information he had acquired. Dr. Wood and Mr. Parrott then proceeded to Vera Cruz, where they arrived on May 30, 1846. Here he found an American fleet blockading the harbor and, after obtaining the letter he had written, was fortunate in securing the use of one of the boats of a German vessel to take him off to the flagship.

The Admiral commanding the fleet sent him at once to Pensacola, Florida, on the U. S. S. Mississippi[8] and in due course of time he arrived in Washington and reported at the Navy Department, where the Secretary of the Navy, Mr. Bancroft, complemented him highly upon the courage and ability he had displayed in his journey across Mexico.

Some years later a controversy arose concerning the part Dr. Wood had played in this affair and he received from Commodore Sloat the following letter acknowledging the great service he had rendered.

New York, 20th March, 1855

My dear Sir:

I am most happy to acknowledge the very important services you rendered the Government and the Squadron in the Pacific under my command, at the breaking out of the war with Mexico. The information you furnished me at Mazatlan from Guadalajara (at the risk of your life) was the only reliable information I received of that event, and which induced me to proceed immediately to California, and upon my own responsibility to take possession of that country, which I did on the 7th of July, 1846.

I have always considered the performance of your journey through Mexico at that time as an extraordinary feat, requiring great courage, presence of mind and address. How you escaped from the heart of an enemy's country, and such a people, has always been a wonder to me and has been so characterized by me upon all occasions.

Very truly your friend,
John D. Sloat

Dr. Wm. Maxwell Wood, U. S. Navy.

At the time of Dr. Wood's return to Washington he was much interested in securing an improvement in the conditions imposed by law upon members of the medical corps of the Navy and he took advantage of his visit to the Department to state his views to the Secretary. So favorably was Mr. Bancroft impressed with Dr. Wood's ideas that he requested the doctor to submit them to him in writing. From his letter which was written under the date of June 29, 1846, we learn that Dr. Wood proposed that assistant surgeons and passed assistant surgeons be given rank corresponding to that of master, surgeons with less than ten years' service to that of lieutenant and surgeons with more than ten years' service to that of commander. Nothing, however, came of this proposal.

[8] Shippen, E. A Christmas at Sea. Phila., 1880. "The Mississippi was built at the Philadelphia Navy Yard, about 1840, and her machinery and hull were so good that, although one of the pioneers of our steam navy, the staunch old frigate performed more active duty during her day than any other vessel belonging to the service. She made six full cruises in all. She was nearly six years in the Gulf of Mexico, during part of which time she bore the flag of Commodore Matthew C. Perry, and participated in the bombardment of San Juan de Ulloa, the capture of Vera Cruz, and the taking of Tuxpan and Tampico. After that she was in the Mediterranean, as the flag-ship of Commodore Morgan, and, upon her fourth cruise, was again the flag-ship of Perry, who appreciated her excellent qualities and selected her for the expedition to Japan, which resulted in the accomplishment of what had been supposed an impossible task, the opening of that remarkable country to the world.

"The Mississippi's fifth cruise was again to the East Indies and China, where she passed through all manner of typhoons and hurricanes, a solid mass of live-oak and heart-pine, moved by engines which beat as regularly and surely as a healthy man's heart, and proved herself one of the best sea-boats that ever floated. Her sixth and last cruise was in the Gulf, during the Rebellion. She was constantly employed, from the early part of the war until her destruction in front of the batteries at Port Hudson, on the Mississippi River, on the 15th of March, 1863."

Dr. Wood was granted leave of absence until September 15, 1846, on which date he reported for duty at the U. S. Naval Rendezvous, Baltimore, Maryland. Here he was the only medical officer and, as his work was spread over the entire city, he requested the Chief of the Bureau of Medicine and Surgery, Surgeon Thomas Harris, to furnish him with an assistant. This request resulted in his assignment to the receiving ship at Baltimore, the U. S. S. Ontario. Duty in Baltimore was congenial and he made many acquaintances in the city. During the following summer he received two months' leave which he spent in the vicinity of New York City, where he supervised the publication of his book "Wandering Sketches." A letter written to the Hon. J. Y. Mason indicates that he was able to greet his shipmates on the Savannah when that vessel tied up to the dock at the New York Navy Yard on her return from the Pacific.

On June 1, 1848, Dr. Wood was detached from the receiving ship Ontario and ordered to report for duty on board the U. S. S. Michigan. The Michigan was stationed at Erie, Pennsylvania, from which port she made, from time to time, short cruises about the Great Lakes. Dr. Wood remained on the Michigan until October 3, 1851, when he was detached and placed upon waiting orders.

He took an active part in the social affairs of Erie where he made many friends and on several occasions he delivered addresses before the members of the Irving Literary Institute of that city.

At a time when quackery was rife and more cults and systems existed than today, he delivered an address on "Hints to the People upon the Profession of Medicine." In this address he gave his hearers a comprehensive view of the aims of the leaders of the medical profession and exposed many of the follies of the day in relation to medicine.

On another occasion Dr. Wood delighted his audience with an address on the "Naval Institutions of a Republic." This address was so "eminently calculated to promote the public good" that the members of the Institute requested him to publish it. In it he dealt mainly with the need of certain naval reforms and its perusal brings to light many of the disagreeable features of the old Navy in which a service of nearly a quarter of a century had afforded him opportunities for observing and reflecting upon its nature, peculiarities and need of reform.

"The history of the Navy," said he, "is not alone the record of its deeds, be they glorious or ignoble. Its deeper and more significant history is to be found by an inquiry into the influence it has had upon principles; in destroying or modifying those in existence, or, in creating new ones; its influence upon human rights, political institutions and the relations of men to each other."

Speaking of conditions which should exist in the Navy of a republic he said:

> The population of a republican navy consists of the efficient power of the crews and officers to direct and control it; both, equally citizens of the commonwealth which they serve in different but associated capacities. The arrangements should be such as would secure in all grades the best talent and mental and physical energies which the country can produce. The relations between these grades, their dependence, one upon the other, should be just that which would best accomplish the national purpose, for which the navy is organized and paid, and in nothing should the one be made tributary to the personal pride and arrogance of the other. Definite laws should protect the rights of the inferior or commanded class, and restrict the exercise of the controlling power to its legitimate use.
>
> So long as a naval establishment observes these legitimate relations, and is in harmony with and subordinate to, the political institutions of the country, its character will be both republican and efficient. But mark how stealthily, gradually, and insidiously change may come over such a body, even if originally organized upon proper principles. The class exercising military authority is too apt to lose sight of its true official character; representing the laws

of the land—an honorable and dignified station—it learns to feel that all the pomp and parade of high station is a personal tribute to those who receive it, and a distinction to them, as of superior blood to other men, with an intrinsic claim to higher privileges. From this error, it is an easy transition to exact a blind submission to every whim and caprice, as a necessary part of military subordination and discipline; to believe that they have no responsibilities, and their subordinates no rights; until, finally, it becomes more than a vague idea, that ships are built, men paid, and the navy kept up, chiefly for the benefit of the influential classes in the service. Questions are considered, not so much in reference to the interests of the country as in reference to the institution. Innovation is dreaded and opposed, lest it should shake exclusive privileges. The broad principle of patriotism is narrowed to that of class interest; and any one who, faithful to the navy, would throw the protections of reform around its honorable members, and make the whole an honest and working institution; any one who with honest motives undertakes to point out existing evils and their mode of correction, does it at the risk of being stigmatized as a traitor to the service.

Such are the gradual changes, which, without the constant vigilance of the people, may influence a naval establishment, even if it had a fair beginning, which ours never had; and when this change has been effected, new principles have been introduced, entirely at war with republicanism. A privileged class has been instituted, to whom a large share of the wealth and honors of the country belong, irrespective of any claim of merit or service. The general character of our institutions has been departed from and as positive a nobility created as though its members received the titles of Lord, Earl, Marquis, or Duke—a more obnoxious nobility than belonged to kingly France, when her titles, instead of being the inheritance of families, were the meed of distinguished service. A subordinate instrument of the government has thus become an independent institution and, without altering one word of the constitution of our country, principles have grown up contrary to its whole spirit and purpose.

Such evil influences are more operative during the quiescence of peace than during the activities of war. In war the value of every grade and of each man in every grade is felt, and the work and the purpose for which they are put there are more plainly before them all; their responsibility to their country is more apparent, and commanding officers feel that their own position, honor and glory are dependent upon the hearty cooperation of all departments of the ships or squadrons placed in their charge; the instruments of success have then their proper weight in the work.

In peace, on the contrary, there is no such conservative dependence, there is no definite and great object before the eyes of all, to which their energies, in proper relation and subordination, are to be directed, and for which those relations have been established. It is merely seen that one set of men has great privileges and power and that another set is subjected to the former—relations which, as we have seen, are apt to grow into false views of the position of each.

Referring to naval law as it then existed, he remarked:

In the year 1800, at the very commencement of this century, an act was passed by Congress, for the "better government of the Navy of the United States" and incredible as it may appear, characteristic of stagnation in the midst of progress, this law of more than half a century's duration is that which governs the Navy now, without a line or word of alteration, excepting the repeal, by the last Congress, of those portions which authorized the punishment of flogging, and the continuance of this improvement is now strenuously resisted. If this law had no greater age than that of its enactment by our Congress, it would still leave the Navy far behind the progress of a progressive age, and in this respect there would be a want of harmony between the Navy and the country. But when we come to examine this law, we find that it wears but the mask of the republic, and behind this will be seen the wrinkled features of a barbarian antiquity. . . . Destitute of rewards and encouragements, destitute of securities for the natural rights of men, the Navy offers no inducements for the respectable American seaman. Although he may not be flogged now, he has nothing to look to beyond his subordinate station, and he may, though characterized by every good quality, be confined for months within a few yards of the shore to the narrow limits of a man-of-war, and tantalized by seeing officers and officers' servants hourly passing in and out of the ship, enjoying a freedom denied to him who finds the floating castles of your country but prisons for their defenders.

The history of mutinies, from those of the Nore and Spithead, down to those in our own service, shows that one of their most effective causes has been the confinement of men on board ship. One of the first demands is for liberty to visit the shore; and the fact that all authorities, from officers of ships up to ministers and kings, have been compelled to yield to those mutinies is proof that discipline cannot be effected by severity, and also that law should secure to ship's companies the privilege of freely visiting the shore when duty would permit. The opportunity of getting out of a ship under such circumstances becomes an intoxicating excitement, and leads to excess; whereas, if the privilege of liberty like that of food was guaranteed by law to the deserving, it would become a natural enjoyment, instead of a morbid excitement.

I have seen the strongest men tremble with agitation, at the privilege of visiting the shore for a few hours, after long confinement on board ship.

Can desertion under such circumstances be a matter of surprise? The very human nature of men is driven to crime by the imperfection of the law which then comes down with its bloody penalties.

With such an organization can you expect to create an American Navy from such stuff as American citizens are made of? Would it not be a disparagement of our boasted American character if you could? The best tribute to our country, and severest commentary upon our Navy is found in the fact that so many foreigners enter our naval service.

If it were possible that such a code as governs our Navy had been devised by wise heads, after careful deliberation and with an intelligent adaptation to the institutions of our country and the character of our people, it would still be likely to require alteration and improvement; but, I may ask, does this law bear one single feature of our country in all its changes from the stern landing of the freedom-seeking Pilgrims, to the waving of our national banner over the golden hills and pearl-gemmed waters of our new Pacific Ocean state?

It does not. This code of law is older than our government, older than our people, older than modern civilization! As a pretended American law it is an imposture disgracing our statute books. It is a blind copy almost word for word of the British articles of war, framed under George II, in 1749, one hundred and three years ago [this address was delivered in the year 1851] but actually based upon and embodying the ideas, condition of things, and spirit existing at the remote origin of the Royal Navy.

Dr. Wood quotes from a British authority the following passages descriptive of some features of British naval service as they existed in the eighteenth century:

The British Navy was founded at a period when slavery was universally tolerated and liberty comparatively speaking unknown. The first record we possess of what may fairly be termed a Royal Navy, goes back to the reign of Henry VII, who, in 1488, caused the Great Harry to be built and launched.

The arbitrary measures which, at that remote period, directed every department of the state naturally extended to the maritime service, and while the brutal and irrational system of impressment formed the means of manning the navy, the allowance of pay and provision were worthy the system which provided the seamen to consume them.

Of all the anomalies which have proved a reproach to the British constitution, and an inherent cause of gangrene and disorder, the press-gang has been the most odious in its origin, and the least excusable from its results. Under this remnant of feudal villainage, the arm of undiscriminating violence was made to sweep up for the noblest uses of the country all who were so poor, so ignorant, so unfriended, or so vicious as to be thrown at large upon the highways of the empire, without the protection of those inconsistent immunities which arbitrarily acquit the wealthy from protecting their own possessions. . . .

In contradiction of every axiom of equitable nature, the abject and friendless were seized for no crime, but their poverty and insignificance, and imprisoned in our men-of-war, after no trial, save the capricious will of our inebriated master of the press-gang. Thus a number of outraged individuals were collected in our fleets. If they behaved well, fought the battles of their country, and drudged unrepiningly through the severe life of privations, which alone the navy has to offer, they became valuable to their tyrants, and thus unwittingly riveted around their own necks, the chain of that servitude which has to gall them through life.

When the pen of truth records the atrocities of such a system in the nineteenth century, the mind, unaccustomed to dwell upon such a complicated detail of villainy, can, at first, scarcely credit the demonstration of such facts. But the press-gang was merely the first step to the barbarities which, in the Royal Navy of Great Britain, ignorance and helplessness have suffered on the one side, and cruelty and power have inflicted on the other.

Our fleets having been manned by a force so resistless and relentless, the unhappy wretches imprisoned on board, were treated in every manner befitting felons condemned to so awful a punishment.

The unoffending captured by armed violence for the naval service of the state was only allowed at rare intervals, and in many cases never again, to land upon that shore with which everything worth estimating in life was connected. From the hour he became an involuntary seaman, he was too often cut off from all communication with friend or relative and generally sent to an unhealthy climate.

There, predisposed to diseases from the sudden transition, life was either lost or rendered merely a burden for the future; exposed to a duty harassing in the extreme, he was placed under the absolute disposal of a petty monarch whose slightest caprice was indisputable law; yet, under all these oppressive afflictions he possessed no appeal from any wrong, save to a code of jurisprudence, so severe that every line appears to have been traced in blood and every other penalty is a shameful death!

Dr. Wood continues:

In addition to these press-gang victims, the jails were emptied to man the fleets; and the code of laws devised for these captured slaves and jail felons is that which we have condescended to adopt for the government of a navy of voluntarily enlisted citizens.

But the picture is not yet complete; the poor wretch, felled beneath the club of the press-gang and torn perhaps forever from his family and home with the fiendish humanity worthy of such a pandemonium, has the intoxicating draft presented as the balm for his sorrows, that his whirling brain may lose, in this new frenzy, the madness of his wrongs and all the respect of the man be sunk to the level of his associate felons to whom the same cup comes as the familiar solace of vice. All this you have borrowed, too; the spirit-room and the rum cask still disgrace your national vessels, and the roll of the martial drum is daily heard calling your crews around the "grog-tub" to receive the potion which shall send them away with inflamed bodies and fired minds, ready for the quarrels, the insolence and insubordination to their officers, which heretofore has consigned their backs to the "cats" and still turns the sailor over to handcuffs, imprisonment and the sentry's charge.

The whole system is clearly one calculated to manufacture crime, to degrade man, to nurture the spirit of cruelty and to supply the food for its exercise. The degradation is not confined to the masses; the contact of officers with such men, the disgusting criminal police duties growing out of those relations, have a deteriorating influence upon all. How long shall this system be permitted to continue? The people of this nation are responsible for its existence, and every citizen who does not do his utmost for a reformation is responsible for the evils he may deplore and condemn.

I know that our naval triumphs are pointed to as a reason for a continuance of the system under which they have been won. They only prove the difficulty of eradicating all that is noble in man. Under the worst influences and after the loss of every other virtue, he still has left that animal courage which leads him to desire and strike for victory. The navies of Europe, under the worst possible institutions, have won glorious victories. The debased machine soldiery of Europe has won splendid triumphs, but they were as nothing compared to the magic glories of Napoleon who peopled his army with citizens and opened the way from the ranks to the marshal's baton. The history of our glory does not prove that crime, intoxication and degradation are essential to glory, whilst, upon the contrary, all history does prove that the more elevated in tone and character a military body the greater are its incentives to action, the less the trouble of its government and the more sure the probabilities of success.

The routinists of Europe were frequent in their predictions that our militia would always be easily scattered by defeat. The events of the late Mexican war dissipated their theories in astonishment, and then the press of England proclaimed that the American army was an army of Knights. Why, from the same materials, cannot we have a navy of respectable American citizens? We can and we will.

But where will the reforming influences come from? Whose business is it?

It is the business of none so much as the people, and they must impress their wishes upon their representatives in the National legislature. It should be said to those officers who are not committed against reform, who are not fossilized conservators of usages a thousand years old, "Those of you who can successfully command ships without the lash shall be promoted to the rank of command: then permit them to recruit their own men, shut up the grog tub, give them a system of rewards as well as punishments, suited to the character of our times and people. . . . Do this and you will hear no more of the necessity for the lash for the government of American seamen.

Speaking of the method of appointing officers Dr. Wood said:

When appointments are to be made to the lowest grade of officers in the line, instead of being thrown open to general competition and given to those who after a proper examination give evidence of having the highest mental, moral, and physical qualities for the station, they fall only to those youths who have the aid of family or political influence, and thus your officers are made by accident and not by the claim of capability. Fortunately, the general character of the youth of our country is such that a majority prove worthy of their selection and under congenial circumstances would develop high character. But the questions are: Is the plan republican? Is it the most expedient? Is it honest, either to the country, or to the youth of the country? It is neither. That plan is not republican which does not offer an equal chance to elevation to the deserving, be he the child of the chief magistrate, or of the most humble citizen. It is neither expedient nor honest for either party, if it diminishes the chances of securing the best services for the use of the country, or excludes those capable of rendering them from a trial of their merits. Whilst the accident of influential friends may pension upon the country an unworthy incumbent, the friendless youth, gifted with the qualities to honor his country, who desires an opportunity of serving it, must seek it as an enlisted hand and once enlisted, the stigma of caste is upon him; he is in a class from which officers are not made; encircled by a rigid barrier of inferiority and cut off from the hope of elevation.

"Excelsior" is an impulse of the American heart, and whilst this impulse beats, our youth will not enter an employ which binds them to inferiority; consequently by this plan, we inflict a double injury upon the country. We exclude respectable young men from the ranks of the navy, and, as above stated, we limit the chances for best selection of officers. Suppose that when vacancies occur in the junior grade of officers, they were, in the true spirit of republicanism, thrown open to general competition and given to the most competent the probabilities are that those who had the advantage of some nautical education, with other proper acquirements, would have the best chance of success, and thus would be established a principle elevating your whole naval service. Instead of the Navy being the hiding place of the reprobate and criminal the ships would be peopled by the energetic, the enterprising and respectable youths of the country; and with such crews and such officers, defeat in war, where victory was within the scope of human effort, would be impossible.

Dr. Wood's ideas on promotion by seniority may be gathered from the following:

Defective and unjust as is the mode of appointment to the navy, the principle which decides promotion to the higher grades is still more defective and is calculated to impair the good qualities which may accidentally have been brought into the service by the young officer.

It would be thought very senseless, ridiculous and absurd, if it was proposed that those of your borough and county magistrates who lived the longest, should be the judges of the Supreme Courts of the states, and those of the state judges who lived to the greatest age should form the Supreme Court of the United States, or that the longest-lived members of the Legislature should be your representatives and senators in Congress. Absurd as such a scheme appears, it is precisely that upon which naval promotion is regulated.

The youth who has gained admission upon partial selection when he arrives at twenty-one years of age is examined as to his character and acquirements. If successful in this examination his destiny for life is fixed. This test in his early youth determines the duties, honors and station he shall fill at thirty, forty, fifty, sixty, or more years of age, no matter how much his character may change in the meantime, or whether, being fit for one class of duties he is entirely unfit for others. The simple rule is that the longest liver shall have the highest rank—and the most pay. Such is the seniority rule of naval promotion. The unrepublican character of this rule is manifest. Honor and station being the consequence of the accident of long life—constitute a nobility as much as if they were the accidents of birth; a nobility existing independently of the ordinary responsibilities of men. A mechanic, a business or professional man is dependent for success upon the abilities he shall establish in the community to which he belongs; so is it with your public men; and if these shall, in the progress of their lives, forfeit the confidence they had once merited, they lose the public support. Not so with the naval officer; his promotion is independent of the community to which he belongs. The officer of the highest talents and most efficiency may grow old in an inferior station, whilst the most inefficient may occupy the highest. The disastrous effects of such a system are painfully evident in our naval service and common sense ought to have anticipated them. In the first place the ordinary incentives to continued labor and improvement are removed. What good can it do the individual? None, officially. In truth the rewards of such a system are for worthlessness and incompetency; because, if an officer becomes known to the service and to the department for objectionable or incompetent qualifications, he is not put on duty, but [permitted to remain at home, on good pay, whilst those of better reputation do his duties, and yet if he lives up to a vacancy in a higher grade, unless he is eminently notorious, he steps into it with its rewards and honors. The consequence of all this is, that those officers who represent the greatest vigor of age and of mental and physical power, are growing old in subordinate grades, some of them in that of apprenticeship. There are now many passed midshipmen, older than were Perry, McDonough and Decatur when they achieved the victories which have given their names to history.

Dr. Wood was always interested in the welfare of the medical department and anything which tended to detract from its efficiency produced a prompt response from his able pen. The following letter contains his protest against a change made in the status of the "Surgeon's Steward."

U. S. Steamer Michigan,
Erie, July 24, 1851

Sir:

I take advantage of our return to Erie, after a short cruise, to reply to your communication of the 9th inst.

I regret that the interpretation of the late Act of Congress in regard to rations, requires the "Surgeon's Steward" to draw his ration in kind, as it diminishes the inducements, already small, for suitable persons to engage in this capacity, and must often prove an annoyance both to the ship and the sick.

I regret still more, and with surprise learn the fact, that a regulation of the Department now requires this class of officers to be shipped men, diminishing if not entirely destroying our opportunities for getting suitable persons, and returning medical officers to the painful experience of drunken or broken down apothecaries and medical students, by whom the surgeon is harassed, the sick annoyed and the public property destroyed. Such was my experience, as I believe it was of most medical officers under the old system, now revived. It cannot be expected that except by accident or deception, persons will place themselves in the position of foremast hands, who are possessed of the requirements of Art. 32 of the Book of Regulations, which states that Surgeon's Stewards ought to be "Persons who have had opportunity of acquiring some knowledge of pharmacy; who possess a good knowledge of ordinary accounts, a legible handwriting, trustworthiness, methodical and industrious ways, a good disposition and temper and above all, temperate habits."

Under the recently existing system of appointment such men have been more easily procured. Of those who filled the station at the Baltimore receiving ship, one is now among the most respectable and successful practitioners of that city, another has been resident physician of the Baltimore Infirmary, and a third is now a medical officer of the U. S. Army.

Of those who have been with me on this station, one is a practitioner of medicine, a second has almost entire charge of an apothecary establishment in Buffalo, and a third is preparing for the Roman priesthood. After such a contrasting experience, I can but regard the present regulation as adding to the difficulties of duty, and diminishing the security for comfort in the sick bay and to the sick. Believing that an officer owes to the Department the result of his experience and observation upon all that concerns the public interests in his division of duty, I respectfully request that this letter be referred to the Hon. Secretary of the Navy. The method of shipping the Surgeon's Steward, whilst it throws out the proper persons, seems in no way to add to the efficiency of discipline. A steward who holds an appointment, can, like a captain's or purser's clerk, be dismissed his place and the service whenever he proves unworthy, and yet by his appointment and oath he is held amenable to the laws of the service whilst he is in it, but if shipped, he must be reduced to a station for which he is entirely incompetent; and fills then the place of some more able hand. But the serious fact is we never did, and we never can procure proper men under the regulation for shipping and drawing rations in kind.

The present steward of the Michigan, a worthy gentleman who has the respect and confidence of all on board, officers and men, will not retain his place, his health is not such as to enable him to use the ship's ration, and I have no hope of being able to obtain another of anything like his qualifications.

It may not be irrelevant to remark, that there have, of late, been many desertions from this ship, and I am informed that they are in consequence of the privation of comforts caused by the prohibition to stop rations.

Very respectfully,
Wm. Maxwell Wood,
Surgeon, U. S. Navy.

Thomas Harris, U. S. N.,
Chief of the Bureau of Med. and Surgery.

On October 3, 1851, Dr. Wood was detached from the Michigan at Erie and was placed on "waiting orders." He remained in this status until March 2, 1853, when he was ordered to the small naval station then maintained at Sackett's Harbor, New York.

Nothing of importance occurred during this tour of duty and in the spring of 1855 we learn from the following letter that he desired to join the Mediterranean Squadron which was then preparing for sea.

Sackett's Harbor, March 10, 1855

Sir:

I hereby respectfully apply for the appointment of Fleet Surgeon to the Mediterranean Squadron about being fitted out.

My service heretofore has been in the West Indies and Gulf of Mexico, on the Coast of Brazil and in the Pacific Ocean. I have never been in the Mediterranean and had the written promise of the late chief of the Bureau of Medicine and Surgery that I would be detailed for that duty when the last Mediterranean Squadron was fitted out.

Very respectfully,
Your. Obdt. Servt.
Wm. Maxwell Wood,
Surgeon, U. S. Navy.

To the
Hon. James C. Dobbins,
Secretary of the Navy,
Washington, D. C.

The Bureau of Medicine and Surgery having already detailed a fleet surgeon to this squadron, Dr. Wood remained at Sackett's Harbor until September 4, 1855, when he received orders to report to Captain Boarman for duty on the San Jacinto as "Fleet Surgeon of the East India Squadron."

He joined this vessel at New York on October 24, 1855, and the cruise gave rise to Dr. Wood's second book, "Fankwei, or the San Jacinto in the Seas of India, China and Japan."[9]

The San Jacinto was to proceed to Siam bearing a commission designed to enter into commercial negotiations with the rulers of that country. "The ship was filled with boxes of presents for the king of Siam," the doctor writes, "immense mirrors, large chandeliers, clocks and various other articles, show that we have some designs upon the good will of their Siamese majesties." From Siam the vessel was to proceed to the China station, visiting Japan, where another commission was to secure a port treaty.

As Dr. Wood was ever ready to attack the abuses in the Navy of his day, it is not surprising to note in the opening chapters of "Fankwei" the following critical remarks on some of the conditions then existing in the naval service.

It was a murky October evening as my friend and I stood at the foot of that great thoroughfare, which is at once the pride and the nuisance of New York. Our parting words were spoken to the sulky dashing of the waves against the shores of the Battery.

"A pleasant cruise—an interesting cruise—you are going to have," were his words as we shook hands and said "Good-bye."

A pleasant cruise! and an interesting cruise! They were soft-sounding words, but it was the vinegar upon niter—the singing of songs to a heavy heart.

He might well have music upon his tongue, for he turned to walk up that broad, bright avenue whose myriad lights were just beginning to blaze upon the increasing darkness, and his day would close amid the endearments of home. But I, with a number of small parcels, the last gathering of conveniences for shipboard existence, stepped into a small boat, and with a few strokes of the boatman's oars, we shot out upon the dark waters and I had left the shores of my country at best for years. We glided through the ships heaving and rolling at their moorings, and in a few minutes I and my bundles were passed up the sides of a clumsy, black-looking vessel, with a smoke stack protruding from the deck and guns projecting from her sides.

It was once more a shivering plunge into the ceremonies, the restrictions, the petty formalities, and mole-hill mountain jealousies and privileges—to say nothing of the physical privations—of man-of-war life. If I tell the reader what these are, it is not to weary him with unhappy complaints; but to deal justly by him, and to present him, in this narrative, not only with the scenes before my eyes, but also with the spirit which looked out upon them, and to show, I hope, for the good of those who come after me, how many gratuitous annoyances are added to those necessarily incident to naval life.

The transition was to oakum and bilge water; to my room, dark, cramped and dreary, six feet square, broken upon by crooked ship-knees and heavy beams. Permissions to go and orders to come, given by strange men younger than myself, whom I never saw before; my light at mid-day an allowanced candle, and that blown out of ten o'clock at night by an humble ship official, whether I would or no. A booming gun and the reveille of a rolling drum awake me at daylight, and the same sounds tattoo the closing day.

The day lowered in congenial gloom, the wind moaned and sighed through the rigging; a cold, drizzling rain of October 24, 1855, baptized my first day on board the United States steam frigate San Jacinto—the beginning of from two to three years of such an existence.

I sat in my *state-room*. It was the Surgeon's room, the fourth one, the last but one back on the port side. The Chief Engineer, the Master, the Purser, were all ahead of me, although in age and service I was by much the oldest officer in that mess; and, except the commander-in-chief, the oldest in age in the ship. At this time I am in my thirtieth year of service, and twenty-nine years ago, as acting surgeon of a sloop-of-war, I inhabited the same relative cell. Time and service had brought no change of position, of privileges, of physical comfort in my shipboard life. I was worse off. Then there were youth and hope to buoy me over annoyances, and my companions were of congenial years. Now I was alone. Those of my original associates who were left, and they were but few, as captains and commodores were separated from me by duties, rank and distant stations. Of the occupants of the nine state-rooms besides my own, all, save one, were strangers to me. The difficulty of forming social intimacies increases with years, and I could not expect the tastes, sympathies or conversation of those so much younger than myself, to accord with my own. I had now the high sounding title of the "Surgeon of the Fleet," with its real duties and responsibilities, but this was simply a gilded cap upon my head, while I was left shivering in the tatters of the old garments of my youth and more humble position.

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[9] See footnote[4].

On the following morning the outside world brightened up a little, and it was a fine, cold, clear October morning, when we passed out to sea through all the beauties of the harbor of New York. Our first port is a dead secret, because, if we all knew that, the commanding officers would be no wiser than ourselves, and the profound humbug of mysteries would be lost to our wonder. This much we do know, that we are to go to Pulo Pinang, in the Straits of Malacca, and take on board the Hon. Townsend Harris, Consul General to Japan.

At our first Sunday morning muster we had read to us the articles of war in all their thundering terrors, and the ever recurring penalty which closes so many offenses: "Death, or such other punishment as a court martial shall adjudge"—the bullet and the halter.

There seems to be among us a strange overlooking, or inconsistent view of human nature, or Navy nature is not human nature. In the first place, there is an expectation that every one who goes on board of a man-of-war is to hold all sorts of death—hanging, shooting or drowning—in utter contempt. Indeed, he is to seek them as the natural end of existence and to be hung or shot for avoiding them, and yet these are the official threats: "To haud the wretch in order."

And once a month, on sacred Sabbath mornings, they are ferociously shaken over our heads, begetting no other feeling than contempt or defiance.

The assembled wisdom of the nation, by slow and painful processes, got a kind of inkling that terror and threats were not the most expedient means of governing the American seaman, and they devised a code which, in pay, privileges and honorable testimonies, offers a reward for fidelity and obedience. But this ray of sunshine was not permitted to gleam through the cloud of the death penalty and the gloom of the articles of war. It was a mistake. How many besides Chinese are befogged by "old custom!"

On two successive Sundays we had first an undress and then a full-dress uniform muster. Our costume has been inflicted upon us by some golden-fancied authority and devised by a rule of wide departure from the fitness of things. It is to be hoped that imprecations, as well as prayers of better significance, have their efficiency at least modified by the source from which they emanate, otherwise I should fear much for those who perpetuate cocked hats and full-dress blue cloth coats lined with white silk and stiffened with embroidery.

It was a busy scene in all our apartments on the Sunday of that full-dress muster. Gold and glitter all about—hanging over the chairs and lying on the tables. Officers and their servants busy in tying epaulets upon the shoulders of these same white-silk-lined, blue cloth, embroidered coats; buckling on swords, and giving the right swing to sword-knots, the accurate range to the sharp corners of their cocked hats.

"All hands to muster, gentlemen," said a messenger boy; and we proceeded to the deck, where the crew were already assembled in dark blue cloth.

Guided by splendor of decoration, the eye, in marking our distinctions, would first light upon the commander of the Marines. I cannot undertake to analyze the elegant amalgamation and blending of dark blue, of brilliant crimson, and dazzling decorations which made up his costume. The officers of the line—the captain and lieutenants—were bound in golden bands around collar and cuffs; the seams of their pantaloons being broadly striped with glittering lace. We of the staff—engineer, purser, medical officers—symboled the vigor and enduring vitality of our country by modest wreaths of the acorn and leaves of the live oak. The olive-branch and paddle wheel on the collars of the engineers designated their special vocation and spoke of the peaceful progress of art and science. There were smaller lights whose twinkle was scarcely noticed in this golden blaze.

"Stand in a line, gentlemen," said the first lieutenant, "the captain wants to see that you are all right"; and the captain marched slowly down the line scrutinizing our costume closely. We were pronounced "right" and the ceremony was over.

If all that which is now but tawdry decoration had a purpose of practical utility—if epaulets were steel plates to defend the shoulders from sword cuts, and crimson sashes were for stanching blood and bearing off the wounded—they might be in accordance with common sense. However, there is yet hope, even for uniform boards. The time was when they cuffed and caped me in sable velvet, and tapered me off in white small-clothes, and silk stockings, and gold knee and shoe-buckles.

The inappropriate and expensive character of the uniform of officers is, however, a small matter compared with the infliction of an unsightly and distasteful garb upon the crew—adding another to the unnecessary disgusts of public service. There are few things in which seamen are more tenacious than in the fitness of their costume; and yet our authorities have imposed upon them a dress burlesque and unsightly, and so distasteful as to have excited general dissatisfaction. It consists in appending large white duck cuffs and collars to their blue flannel shirts.

We had been at sea some time, when another muster of costume was ordered, to see if these supplements were appended to the shirts.

As we stepped upon deck, where all the crew were assembled, it was difficult to suppress a smile at their appearance. The expanse of white collar and cuffs, contrasted with their dark blue clothes, made each weather-beaten, knotted, gnarled, bearded head seem to emerge from a child's pinafore pinned behind.

On a bright Sunday morning, November 11, 1853, the San Jacinto was running along the mountainous shores of Madeira with its white villages and cottages perched, one above the other, far up the mountain side. The air was soft and balmy. Blue and gently rippling the sea stretched away on the starboard side, while to port, rocky, brown, red and purple, the mountain island rose from the ocean. Soon there came into view a pebbly beach, along which is built the city of Funchal, white and brilliant, house above house and street above street, climbing up the mountain side. Outside the city, on even higher terraces were the cottages and country residences, while still farther up, beyond all visible habitation and overlooking all was the church of "Nossa Senhora do Monte," its white turrets contrasting with the dark mountain background.

Quite close to Funchal the anchor was dropped. Going ashore Dr. Wood was soon among old acquaintances and enjoying friendships formed during his visits to Madeira when serving in the Brazil Squadron some years before. In "Fankwei" he gives a delightful sketch of the island and its people as it then was. However, the word Madeira to the wide world of that time did not mean the mountainous island but rather the glowing liquid furnished by the grapes of its terraced vineyards. As the wine of Madeira is now quite a matter of history, it may be interesting to read the paragraphs Dr. Wood devotes to it in his book.

> If I take any curious, inquiring reader with me to the table of one of these princes to which I am invited, he must not fear a wine debauch. This place of epicurean refinements and of delicate bouquets is not that in which a man puts pints and bottles under his belt, overwhelming all delicate perceptions. The wine drinkers of Madeira are true epicures. A highly-flavored glass or two during dinner, a lengthened coquetting with a glass of some choice vintage after the cloth is removed, and that is all. Indeed those of the most nicely discriminating tastes rarely *drink* wine at all. Of course this commendable moderation may be in some degree departed from when they have a set of strangers desirous of taking advantage of a chance visit to go through all the choice vintage at one sitting. Well, we have dined and taken a glass of the ordinary table wine, generally known abroad as "London Particular," or else a glass of a dark port-looking and astringent-tasting Vino Tinto. Both are

pronounced to be extraordinarily good, of course. As we are now drinking for wine information, we inquire what these wines exactly are. But stop—we will say nothing about the matter until there is a greater variety under discussion. The dinner is over, the dessert finished, the cloth removed, and with the nuts, . . . decanters are placed at each end of the table, and the silver necklaces suspended from their throats indicate them to be Malmsey—Bual—Sercial—the aristocracy of wines. In addition to these we have the Verdeilho and the Tinta. These five constitute the principal wines of the island of Madeira. They are all named from the kind of grape from which they are made. There are three others, but they make only a low order of wine seldom seen. The Verdeilho is that generally used and known as Madeira, London Particular and so forth. It is deepened in color by a slight addition of Tinta, and flavored by the rich and aromatic Bual. Sercial is also a highly-flavored wine. Malmsey is generally known to be a sweet, luscious and cordial-like wine. These three last are the most costly. The Tinta is made by pressing the husks and seeds with the juice . . . . . . Having tasted gently of these choice wines, another element of quality was brought under discussion—the element of age. Our host told us that the bottle he was then having opened, was of the vintage of 1815—going on while Napoleon the Great was off the island on his way to St. Helena, and was, therefore, at the present drinking, forty years of age. But neither its age, nor its unhappy historic association was the cause of its excellence; at that period *L'Este*, a hot, dry wind, the Sirocco or Harmattan of Africa, was of more than usual prevalence and the grapes ripened in superior richness. It was, to my, and I believe to the general taste, a finely-flavored wine. Next, with due ceremonies and honors, a bottle was opened which our host, an English gentleman, told us was their "Independence" wine, being of the vintage of '76. My companions all thought it very superior, but, to me, it had very much the taste of a vapid medicated ether, and I honestly pronounced it, to my taste, unmitigated trash, and I remembered to have tasted, eighteen years before, a wine at the same table which had made the same impression upon me. My associates earnestly opposed the correctness of my judgment, and I found myself in a minority of one. I ventured to sustain myself by quoting the opinion of Dr. Christison, which seems to be founded both on reason and experience, viz., that wines do not improve by great age. Like ourselves, they have their growth to their best condition and then deteriorate, but the period of deterioration is different for different wines, or under varying circumstances for the same wine.

At this stage of the discussion our host directed a bottle to be brought with great care from a specially named corner of the garret, and when brought he took it carefully in his hand, drew, and decanted it himself, and handing a glass to me, he said, "Now taste that, and tell me what you think of it, and be careful don't commit yourself." The wine was very clear, and of a pale amber color. I tasted it, mild, unspirituous, aromatic, and at once said, "It is the best on the table, and by far the best I ever tasted in my life." It was then handed to my companions, who all thought it very good, but by no means equal to the '76. Our host then said, with an earnestness and solemnity befitting the occasion, "It is a rare wine—a wonderful wine: there can be nothing superior to it, but it is *one hundred years old*"; and thereafter our host and myself took up with the centenarian; but the Seventy-sixers, with commendable consistency, and perhaps from patriotic motives, stuck to their first judgment. How much honest judgment, or that enemy to progress, pride of opinion, had to do with our pertinacity, none of us will ever know.

I trust that honestly observed facts in relation to the character of wines, and in reference to the social habits of an eminently wine-drinking country, will not be considered as a eulogium upon its use, but if those who use wine habitually in the United States all used it as I have seen it used in Madeira, temperance men might rejoice . . .

It would really seem as if the hand of Providence was directing physical influences in favor of total abstinence by the blight which has come over the grapes in wine-producing countries. Upon a former visit to this island I rode to the Curral das Freiras, an enormous chasm, which seems, when it first bursts upon you, to open to the earth's centre, with its six thousand feet of depth inclosed by the red, rugged pinnacled rocks shooting away to the clear sky above you; but away down in the bottom of the depth you see miniature houses and a church, and they are two thousand feet above the sea.

It is a long up-hill ride of eighteen miles to the point which looks down into the Curral, and much of it is along the edge of frightful precipices, and much of it also, when I made the excursion, was through vineyards where vines arbored over the road, on trellis work, and hung their rich bunches just above your head and ready to your hand. But now such scenery no longer exists. The prophecy of Joel, the son of Bethuel, is in literal fulfillment: "Awake, ye drunkards, and weep and howl, all ye drinkers of wine, because of the new wine; for it is cut off from your mouth." For four years the wine-press has not been trodden, and the vine, fruit, leaf and stem, has disappeared. The annual product of the island was from fifteen to twenty thousand pipes, and this past year not two hundred were made in the whole island. The whole stock on hand is only about ten thousand pipes, not more than the half of one good year's product, and this will be exhausted in from five to ten years; even if the grape were to be recovered now, it would take several years before the new wine would be fit for exportation. The disease, a mould or fungoid growth, has so far resisted all methods of cure, and scarcely more than a lingering hope exists of the recovery of the vine.

Christmas found the ship in southern latitudes and in "Fankwei" we find the following:

We were turned towards Cape Horn, the sea rolled up into fresh, brisk waves, pitching the ship into uneasy motions, and stirring up bilge-water. The air ports, those precious round holes which, about the size of a breakfast plate, let in the air and light to our dungeons, were closed—thick glass plates screwed into them, shutting out of course all air, and reducing the light to that dim, watery kind of a gleam which must reach the fishes in their sea depths. Albatross, too, were sailing magnificently through the air, and skimming the cresting waves. Some of our sensitive natures thought themselves sea-sick, and resorted to small glasses of porter, brandy and water, and horizontal positions.

That little puff did not last long, and now January 1st, 1856, we have another beautiful day, but oh! so tiresome. We have made nothing on our way. Here we are, about where we have been for a week past, and with plenty of coal in our bunkers, a smooth sea, through which our engines could urge us without impediment; our port only about ten days off. Yet here we lay. The same daily routine; rise at six bells, seven o'clock—hear the drums roll for the men's grog while shaving—breakfast at eight—quarters for inspection at two bells, nine o'clock—this lasts ten minutes—then the doctor prescribes, and every one goes to what he has to do, some to duty, and others to reading, sleeping, smoking, walking the deck, and no more break in the day until the drum again rolls for grog at seven bells, half past eleven o'clock, and the Master gets an observation of the sun at meridian, when he tells us all it is twelve o'clock, and mechanically remarks what the latitude is, and the men are whistled or piped to dinner—then we read, and sleep, and walk again. Then, at four bells, two o'clock, the drum beats to our dinner, and this is a grand event, not as a dinner, but as a time mark. We grumble at our food and the caterer, criticise our captain and commodore in particular, and all other captains and commodores in general, are very wise and learned upon the books from which we have, in self defense, been cramming all the morning, but as our learning is only for the occasion, it wears out in one day, and is replaced by a new stock for the morrow. . . . Dinner over, more reading, smoking, sleeping, until again the drums beat for evening inspection of quarters, after the crew, at four or five o'clock, have had their supper—ten minutes at that—the medical officers do the evening prescribing—the men have their hammocks piped down, that is, the boatswain's mates blow their whistles for those men to come and get their hammocks who have the watch below, or whose turn it is to sleep in, and then we have our supper—chat a little. The officers who have the mid and morning watches soon retire to their rooms. He who has the sleep-in gossips with those who have no watch. Eight o'clock puts out the lights on the berth deck, nine o'clock extinguishes those of the steerage, and ten puts out ours in the ward-room, and then the day is done. This, with daily exercise of divisions at the guns, occasional drilling in small arms, and twice a week general quarters for a grand battle exercise, make up the routine of our existence. There is occupation enough—leisure enough—but the occupation is an unvarying form, the leisure, a weary interval of wearying pursuits. No freshness, no change, no novelty.

At this stage of the voyage the officers and crew of the San Jacinto were put on a water ration by the commanding officer which action was the basis for the following:[10]

"Ludlow, you black rascal, what are you at, drawing water out of that filterer?"

"It's for the Doctor, sir," said my sable servant, in reply to this peremptory demand of our most worthy caterer.

"The Doctor has his allowance, three pints a day, and keeps it in his room; you've no business with the filterer—"

"The Doctor wants to borrow some, sir; he'll 'turn it, sir."

"Well, take it along, but if the Doctor borrows water from that filterer, he must return it with interest. Some is always wasted in filtering—you hear?"

"Yes, sir."

Worse, Mr. Caterer, than Shylock. He demanded only the pound of flesh nearest the heart, but you take interest on the fluid of life. But after all, the caterer was right—as a just man he was right.

It was only a few days before this interesting conversation, that the Master, the young gentleman who has charge of our water expenditure, rushed into the wardroom, exclaiming with emotion—

"Well, in all my service, this is the first time I have been upon an allowance of water, even in sailing ships—but, here, in a steamer, I have been ordered to serve out only three quarts a day to each man."

This announcement created a sensation. Three quarts a day is certainly not a suffering limitation. Poor Bligh of the Bounty, with his boat's crew, got on with about a gill a day—got along very uncomfortably, it is true, and had no choice. But Bligh had no coffee, tea or soup to make. He had no hams, pork, beef, codfish to boil, nor beans either. He did not shave every day during that voyage, nor care much whether his face or any other part of his person were washed. Now let any of you who tap the Croton when you will, or let the bucket down the mossy well, or dip from the bubbling spring, make the calculation and see how far three quarts will go for all these purposes, and for what you may require to drink on a melting summer day, and you will see there was cause for a sensation.

Measures were to be taken in this emergency. We were in the tropics, the sun was vertical, our cells were close and sudorific. Such was the condition of those of us most lucky. But the men had to move about twice a week, with great activity, to pull and haul at the great guns, and run about with swords, pikes and pistols in their hands, sweating prodigiously.

Physiologists tell us that the skin is very leaky—runs off about five pounds of water a day; and certain workmen in gas factories lose from two to three pounds an hour. Six pounds a day, to supply such a run upon the fountain of life, would hardly keep it solvent. I will mention another physiological fact, and it is, that when men know themselves to be on allowance, the desire for drink wonderfully increases. Nature resists the force put upon her; and if it must be done, it were well to do it secretly.

However, manly hearts meet stern necessities without complaint, and this must have been a case of necessity. There must have been reasons for it—but as these were none of our business, of course we could not judge from them, and the thinking apparatus is such a busy machine, it will work upon what materials it has for want of better. At one gallon a day each man, there were forty days' water in our ship, and even trusting to winds we were not more than twenty days from any supposed port, and having coal and steam could have commanded our time. There was a mystery in it—a ship mystery which the reader will by and by have solved.

But, as I said, measures were to be taken in this emergency. There was our filterer which we had bought to purify our drinking water, and preserve our health—if the water was all put in that, and every one had the run of it, those who drank early would have an advantage over those who drank late, and those with camel-like capacities might leave the less favored dry. Those of us who had little faith met this difficulty by bottling up our supplies in our rooms. But then there were tea, coffee, and cooking generally. We made a close calculation, and agreed to allow from our share one-half, or three pints, for general mess purposes; that left only three pints for shaving, cleansing teeth, washing and drinking. Such were my water relations leading to the collision between Ludlow and the caterer.

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[10] Wood, W. M. Fankwei.

These solemn circumstances impressed us seriously; and as at the witching hour of night, and in suspected places, we have an irresistible propensity to tell ghost stories, so we drew around the mess-table and told terrible tales of thirst.

Captain Bligh, and his gaunt boat's crew, glided before us. One Navy captain, one of our Navy captains, was told of who so tenaciously held to an allowance of water that it held even in port. Finding a boat's crew bringing off a small keg for their own use, he commanded it to be thrown into the sea. Another was remembered who washed his cabin with fresh water, while his crew were parching with thirst, and some of these sucked the wet swabs or mops with which the washing had been done . . . I myself had a vision of my youth. A beautiful scene in Florida, a wooded hillside sloping down to a pretty winding stream, and just where the margin of the creek washed the hillside, shaded by a branching tree, welled up a gurgling spring. There, by that spring, during the hot summer days, day after day, sat a weather-beaten man, with an honest and benevolent countenance. A broad-brimmed white hat generally lay on the ground beside him, while the cool breeze played with locks which were beginning to whiten with age, although he was but a Lieutenant in the Navy. He was a native of Virginia. One day I remarked to him as I walked by,

"This seems a favorite spot of yours, Mr. Goodwin."

He sprang to his feet and exclaimed, "Sir, it's a paradise. In my section, sir, are many such springs as that, and I've been free to drink my fill, sir, all my life. But, sir, during the whole of this . . . cruise, I've been on an allowance of water, and I sit here, sir, and I drink, drink," he exclaimed with energy, "till I can drink no more, just to spite Captain C.; then I call to him, sir, to come here and put me on an allowance if he dare."

The allowance of water, by strict economy and some privation, got along pretty well for a day or two. The first visible effect of it was ethical. Many moralists contend that there is a close sympathy between a clean skin and rectitude of deportment. Be that as it may, one of the messes found that its whole allowance had been stolen early in the day, and had to ask a fresh supply.

The next was chemical. Salines preponderated in the blood. Ham and mackerel for breakfast, ham, tongue, salt beef and pork for dinner, were found to be aqueducts which ran off the whole supply before the day was done, and we were limited to those delectable uniformities put up in tin cans, whose chief distinction is the labels on the outside.

Next came a meeting at the mast between a delegate from the ship's company, the officer of the deck and the First Lieutenant. The men had found out that rice and beans were great soakers, and sponged too heavily upon their limited means, and therefore wanted permission to leave them in Uncle Sam's possession, restricting their diet to salt meat alone. The men had no tin cans of fresh meats. So far, at least, we were better off than the men.

Once we had laid in a large supply of green turtles. Green turtle soup! After writing these words, reader, both you and I ought not to hurry on, but pause and think upon them, that is, if the flavor of the compound has ever rested upon your palate as it has upon mine—which I doubt. Rich in substantive gelatine, perfumed, gently perfumed, with varied spices, tinted with rosy wine, gemmed with emeralds of callipash, and garnished with golden lemons! We had a French cook, and such was the kind of soup our caterer gave us. But the men had turtle soup too—quasi turtle soup; all except one mess.

One day the attention of the officer of the deck was invited to a man standing at the mast with a big tin pan. All such conferences are held at the mast. It is the neutral ground between the quarter deck and the forecastle—the bar of impromptu justice, and the exchange where conflicting opinion meets. The Lieutenant walked forward and looked into the pan. On its bottom lay a turtle's bony and skinny fin, boiled to rags, and exhausted of juices. The man asked the officer respectfully whether that was a suitable dinner for their mess. The officer did not think it was, and the ship's cook being sent for, explained that this mess had not contributed to their allowance of water to make the soup, and therefore the dry turtle flipper which they gave to him, he returned to them more dry and less substantial . . .

Some times I got very tired of my cell life, and by way of change would ascend to the region of sovereignty, and make a call upon my friends, the commodore and the captain. The first was an old friend, and the latter I had known when he was midshipman; but as I held the important-sounding title of "Surgeon of the Fleet," perhaps I might have ventured in there independent of my amicable relations, but I don't know. I had no right to walk on any part of the quarter deck except the port side—the remainder was reserved for the commodore, captain, first lieutenant and officer of the deck. The space of plank which I had the right to walk, in common with twenty-four other officers, was about twenty-five feet long by six wide.

Well, I made the call, and I should not mention it but for its great scientific results.

I entered the cabin, and took my seat, at the polite request of the very courteous commodore. After a few words of more general conversation, I asked—

"How does the allowance of water hold out with you?"

"Oh, very well—we have plenty."

"Plenty to cook with, plenty to wash with, plenty to drink?"

"Yes."

"More than enough, may be?"

"Oh no; we have to manage and economize."

"Why, is it possible you use your allowance every day?"

When there is an allowance, it is alike to all in the ship, the reader will understand.

"Certainly."

I here began to fall into that painful mental puzzle which precedes the birth of a great thought.

I looked around the cool and airy cabin, with the breeze playing in and out its ports. I thought of my own sweating cell. I thought of more; of cases of claret, and casks of ale, with which we officers might eke out our allowance, by of the difference between cases of fresh meat and chunks of salt junk. I thought of the difference between those sitting in a cool cabin, and those pulling at the gun-tackles, or working in the fire-room, and in these facts and contrasts I had enough to erect a theory upon—more indeed, than the basis of many theories. How is it, I asked, that the same allowance of water which is just enough for men under the most favorable circumstances, is fully sufficient for others in such different conditions? Here the apple hit me on the head. I remembered that the works upon the laws of life are entitled, "Principles of Human Physiology." It is then evident that these pretenders to science have overlooked one fact just under their noses. *Human* physiology should embrace all men; but these observers have failed to study either sailors or officers, inasmuch as naval law so distinctly recognizes a difference in their natures that one or the other must be excepted from "humanity."

I might be satisfied with resting my fame upon this discovery, but I made others.

I promised the reader to solve the mystery of what may be called, "privations without necessity," and it shall now be done.

In the "good old days" under "the ancient discipline" of the service, when men were flogged and officers were committing themselves by getting drunk, breaking their liberty, and other violations of propriety, captains had a glorious time; they could daily give tangible evidence of their authority and roll it as a "sweet morsel under their tongues." They could get into great passions, swear and cry out at the top of their voices, "Go below, sir, and consider yourself suspended from duty," and feel relieved and comfortable. But what can they do in these days of staid propriety? When officers do their duty from a conscientious sense of obligation, and respect themselves more than they fear authority, the captain's occupation seems nearly gone. What there may be stormy in his nature, is "cabined, cribbed, confined" by an invisible circle of conscientious deportment which will not let him blow out. His existence might be overlooked, and so—he stops your allowance of water, and you feel his power in every moving fibre and flowing vein. Is that not reason enough, unreasonable doubters?

No matter where you may be sitting at this moment reading my sea-cell developments, just for a short time imagine yourself sitting quietly alone in an elegantly furnished upper room of a large house. There are two or three hundred people engaged in various avocations in the rooms beneath you, and although acknowledging your superiority, thinking more of their work than of you. This wounds your vanity. You throw yourself back in your chair; you stretch out your legs, and cross one over the other, and think. Suddenly it occurs to you to chain down the handle of the pump in the yard for one half the day, and stick up a notice that it was done by your authority. You may then feel assured that your existence is felt, and may enjoy the consciousness of power. And this mystery of water is the secret of more than half of what is called military discipline . . .

"A fair wind at last," says an officer at the ward-room table, looking up in pleased emotion from the book over which he was dozing.

This fair breeze came gliding over the water, rippling its bright blue surface and sweeping the vessel on over the southern ocean. As it approached the African coast long and magnificent swells were encountered.

Without much wind, our ship running from three to five miles an hour only, they came sweeping down, rolling and tossing us about terribly, and when the wind freshened, it seemed to raise supplemental hillocks of water upon the top of these swells. Looking over a large expanse of ocean, it had the appearance of smooth rolling hills, with lesser hills cresting their tops. Ports closed in darkness, rolling and staggering over this heaving ocean, we sped on our way. January 12th, 1856, was a white day in my geographical calendar, as it was then I, for the first time, rested my eyes upon the black continent whose people have given the world more political and religious trouble than their physical strength has ever given it aid. It was a white day, not only on account of this geographical wonder, but because, after thirty-one days of sea rolling and ship dietetics, we were to have the quiet of port, the fresh fruits of the earth and to tread once more its solid, motherly bosom. When I went upon deck at an earlier hour in the morning than usual, there were the great rocky buttresses, the ragged mountains of South Africa, jutting out into the sea. Table Mountain, and all the individualized and named peaks of this renowned Cape were in sight as we ran along the shores of Good Hope, rounded its promontory, and entered the smooth green waters of Simon's Bay. There a few neat-looking English houses clustered on the beach, at the foot of the gray, naked mountain towering behind them. We cast our anchor in front of Simon's Town—of about one thousand inhabitants—another of the tapping-places of England's world-encircling drum.

On the 28th of January, 1856, the San Jacinto sailed from Simon's Bay and passed into the Indian Ocean, bound for Mauritius celebrated as being the scene of the romance of Paul and Virginia which few read now-a-days. The harbor of Port Louis was reached and the vessel came to anchor on the 15th of February. Here Dr. Wood had his first meeting with the Orient.

On the 21st of February, the moorings of the San Jacinto were cast off and the vessel got under way for Ceylon where she arrived March 6th. On going ashore at Galle Dr. Wood was struck by the varied appearance of the inhabitants and he devotes some pages to his impressions of the Singhalese, Tamils, Moors, Malays and the Europeans which he met in his rambles.

From Ceylon the vessel made her way to that paradise of the East, Pulo Pinang in the Straits of Malacca which was reached on the morning of the 22nd of March, and in his book Dr. Wood faithfully records the details of his visit to this interesting place. The next port visited was Singapore, which he found to be "Penang enlarged."

On Sunday, the 16th of April, the vessel was brought to anchor in Siam at the mouth of the Menam River, "an expanse of muddy water, over whose surface distant twelve or fourteen miles could be seen the tops of the trees on the river banks." A few days later the American commission accompanied by Dr. Wood and other officers of the San Jacinto were taken up the

Menam to Bangkok, the capital, distant about thirty miles from the anchorage. Here the party remained nearly two months while the treaty was being concluded. The description of the diplomatic proceedings is not very interesting at this distant day, but the river in front of Dr. Wood's quarters presented an animated scene which he faithfully recorded. Unfortunately space will not permit the inclusion of the doctor's description of it here. After leaving Siam Dr. Wood writes:

On Sunday morning, June 1, 1856, we reached the San Jacinto after seven weeks' absence, and immediately got under way for Hong Kong, where awaited us our letters of eight months' accumulation, and all the incidents of joy or sorrow which, in a changing world, might in that time await our arrival. There was, also, the hope of liberty for our ship-sick, ship-imprisoned crew, nearly a year in this worse than penitentiary imprisonment without their feet touching mother-earth.

When our legislators produced the act to "provide a more efficient discipline for the Navy," in their simplicity they assumed some natural human rights to exist on board a man-of-war, for they say: "That it shall be the duty of commanders of any vessels in the Navy, in granting temporary leave of absence and liberty on shore, to exercise carefully a discrimination in favor of the faithful and obedient," and among the legal penalties is, "deprivation of liberty on shore on foreign stations." They should first have ordered that the men should not, without great and urgent cause, or as a penalty, be deprived of the liberty of the shore; or some Secretary of the Navy should make such an acknowledgment of right a regulation of the Department. The usage is to keep the men on board ships for months, whereas officers, and officers' servants, got ashore daily in every port. This tantalizing and provoking contrast nurses and feeds the fever of the accumulated excitability of confinement to a water-bound prison; and then, when they are permitted to go ashore, it is in large gangs, for a twenty-four hours' debauch—the naval idea being that the nature of the sailor is to have this debauch, and, in ignorance of man-nature, overlooking the fact that the men have been brought into a morbid condition by the unnatural management of them.

The first touch of the foot to the shore, after such an estrangement, is an intoxication. I have experienced it myself after a long sea voyage. Then to this excitement is added that of numbers, and the incitement to outrage which arises from the physical power of numbers turned loose for indulgence in a weak community. A great lever of punishment is lost, by the fact that no rights or indulgence are secured the good, and of which the bad may be deprived.

Instead of this unnatural management of the crew, suppose, when in port, the men were—such as behaved themselves—permitted to go ashore daily in small numbers, as they could be spared from their duties. The frequency of visiting the shore would diminish the wildness of excitement, the small numbers would lessen the incentives to turbulence, a lever of correction would be constantly on hand, and the bad would be separated from the good. Some sensible commanders have had the good sense to try this reasonable system, and the results are as favorable as might have been expected.

Hong Kong was reached June 1, 1856, nearly eight months after leaving New York. Here a defective propeller blade delayed the sailing of the San Jacinto for Japan and enabled Dr. Wood to visit Canton, which he found to be worthy of pages of description.

The Taeping rebellion was then in its very inception and the populace of Canton (where the principal American interests were) was very unruly and dangerous. The Chinese would not allow any white man to enter the walls of any of the towns and the walks of foreigners were confined to a few narrow lanes of shops in the immediate vicinity of the foreign settlement at Canton. Many Americans and English were seriously injured and some even killed for transgressing these bounds.

At the time Dr. Wood visited Canton there seemed to be an increase of Chinese hostility to foreigners. It was the first rumbling of the storm of war which broke the following fall. Inflammatory placards were to be seen on the streets urging the public to expel all foreigners. The doctor was not to escape manifestations of this hatred.

I arose early one morning and, with a sedan chair and three coolies, started on explorations by myself. The chair I had taken as much to have the chair-coolies as guides as for a conveyance and, therefore, seldom used it except in the more filthy and muddy part of the route. The high, heavy and parapetted city wall, though most of its circuit has small Chinese shops and dwellings built beyond it, with only a narrow filthy lane between them and the wall; and at the early hour of my journey the air was loaded with all villainous smells. Beyond these disgusts and the occasional abuse of boys and cries of *Fan kwei*,[11] I met no disturbance in the first part of my route, and things became more interesting as I came out back of the city into green fields and neat vegetable gardens . . .

I had nearly passed this open space, and was again approaching the dense outside settlements which the wall penetrated, walking ahead of my chair, when I came under the observation of a group of rascals sitting in one of the parapet towers of the wall. From the energy with which they sprang to their feet and cried out *Fan kwei*, I anticipated some mischief, but kept on my way, not taking any notice of them, until their loud curses were substantially accompanied by missiles. A stone struck me on the head, or rather on the thick-crowned rice paper or pith hat which I fortunately had on. It cut into the half-inch thickness of this with sufficient force to show how serious the blow would have been had I worn my cloth cap. Involuntarily I turned, and shaking my fist at the party, threatened them with the vengeance of the mandarins. As soon as I walked beyond their view I got into my chair. It was well I did so, for the rabble among which I now passed in the narrow lanes manifested the greatest hostility. The obnoxious cries sounded ahead of me in the streets, before the chair amid the crowd was visible to those uttering them; and men would rush up ferociously to the side of the chair, as if bent on violence. But my coolies were as anxious to get rid of their burden as I was to be released from the whole party. They kept on a very fast walk, approaching a dog-trot; and I suspect if any thing had arrested the progress of the chair, a violent assault would have been made upon me. I was very much gratified to find myself, after a three hours' journey around the walls of Canton, once more safely in the sanctuary of the foreign Hongs.

A visit of several weeks' duration to Macao inspired the following comments on the city and the Portuguese poet who sought refuge and died there:

I have much respect and admiration for decayed gentry; those who show forth the dignity and refinement of past state and pomp beneath the softening influences of present privation and adversity. They present the picturesque in the social scene . . .

Therefore such old towns as Macao are pleasant to me, made up of great mossy old houses, surrounded by grounds darkened by trees and tangled in shrubbery, which, with the crabbed independence of age, has a will of its own, above all trimmings and trainings. The families occupying these homes—pleasant, quiet people . . . how they live, no one knows—are polished, dignified, unobtrusive, and always seeming to say, by their amiable, mild deportment, "It is affection, not pride, which makes us cling to the old home, and the associations of all that is left us—our family history." What have such people to do with the fuss, and struggle, and turmoil of the present? Their lives are in the past; they are dreamy-looking people, even the children look so . . .

Regarding Macao as associated with the only great poem that Portuguese have produced, there is a harmony in its decay which makes it the fitting monument of the man who wandered the world over, the victim of thwarted first love; who, born noble, sustained his existence by the begging of his negro slave and ended his life in a hospital. As a broken column emblems the useful life cut short, the crumbling city may emblem such a genius in ruin, and the gloom of its existence.

We remember Camoens and the "Lusiad," the beggar poet and the alms-house deathbed; we generously but unjustly forget how much the poet had to do with making his own bed. According to those compensations which conserve a healthful society, his life may have naturally tended to this one end. He had devoted himself to passion, to love, to licentious love, than which there can be no perversion of the human faculties more purely selfish, no exertion of them which makes so little claim upon society, none which so physically effeminates and morally indurates the individual, and renders him unfit for the love of useful labor which has its reward in accumulating comfort.

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[11] Foreign devil.

Camoens had evidently made his bargain with life and written it out:

> Why should I pant for sordid gain,
>   Or why ambition's voice believe?
> Since, dearest, thou dost not disdain
>   The only gift I have to give.
>
> Time would with speed of lightning flee,
>   And every hour a comfort bring,
> And days and years, employed for thee,
>   Shake pleasures from their passing wing.

Such was his bargain, and verily he had his reward.

When Commodore Perry arrived on July 8, 1853, at the Bay of Yedo with a fleet of ships of which the old Mississippi was the flagship, delivered a letter from President Fillmore asking "friendship, commerce, a supply of coal, provisions and protection for shipwrecked American seamen," and returned for an answer early the following year, a treaty was concluded and signed at Kanagawa, March 31, 1854, in which Japan consented to open the ports of Shimoda and Hakodate to American trade and to receive a resident representative of the American Government.

On August 22, 1856, after a stormy passage from Hong Kong, the San Jacinto bearing Mr. Townsend Harris, the first American consul general to Japan, came to anchor in the harbor of Shimoda.

After much delay, Mr. Harris, Commodore Armstrong and his officers, "in all the glittering decorations of a full dress uniform," were received by the authorities.

The opening of Japan to foreigners after so many centuries of isolation could not be affected without some hesitation which is quite apparent in Dr. Wood's description of the installation of the consul general.

> We entered the council house by a hall, covered with fine white matting, almost too neat and white for the tread of our boots. One side of the upper end of this hall was screened off by a folded screen of gilded paper, and to the left of this we entered a light and airy room, almost toy-like in its delicate structure, and the superlative of Japanese nicety . . . . Down the centre of the room were two lines of benches, with a red serge framed tightly over them. In front of one row of these benches were low tables, and upon each table a black lacquered tray, upon which lay two new, long-stemmed, brass pipes, a porcelain cup with fire, another for ashes, and a small lacquered box of tobacco.
>
> A new Governor, we were informed, had just arrived from Yedo; in fact, he was an officer of high rank, especially commissioned for the circumstances of our case.
>
> We were met at the entrance of this room by the Governors and their suite, and invited to the seats in front of the low table. The Japanese officers placed themselves, with their limbs bent under them, on the benches opposite; back of these was a row of inferior persons, notetakers, etc., and on the floor, at a distant end of the room, was a throng of domestics, all similarly resting upon their bended legs. These domestics appeared, from their costume and swords, to be young men of rank. At the upper end of the space, between the Japanese officials and ourselves, was the raised seat of the interpreter, who in this instance appeared to be a gentleman of rank—the intelligent, polished and courteous Moriama. Thus placed, the council was ready. The servants immediately set before us porcelain cups of tea on small lacquer stands, and the talk began . . .
>
> It was announced through the interpreters that the new governor was an officer who had come from Yedo, with full powers to enter into any negotiations with the Consul General which might be necessary. The Japanese seemed disposed to enter upon business immediately, and said, "They knew very well that the treaty provided for the residence of a consul at Shimoda, whenever either nation might think it necessary." What, they asked, "renders it necessary now?" Mr. Harris replied that he

was not in the secret of his government and could not say why it had availed itself of the treaty to send a consul general to Japan. This reply having gone back, they then said, "We know you cannot be in the secrets of your government, but we think you must know the particular reason why you have been sent here."

Mr. Harris said he could only reply that he came under the treaty for such duties as are exercised by consuls in other countries—to provide for shipwrecked and distressed seamen, to decide differences between the commander and men of ships, and to prevent our lawless sailors from violating Japanese laws. This did not seem to satisfy them, and they answered that by the treaty they had agreed to treat kindly shipwrecked seamen, and unless there was a doubt of their sincerity, a resident consul was unnecessary.

They then turned to the Commodore, and asked if he had any power to treat respecting the residence of the Consul General. He replied, "None at all"; he commanded the military, and had received orders to bring Mr. Harris to Shimoda, and, he added emphatically, "leave him there." They then inquired of the Commodore if he knew any reasons why Mr. Harris had been sent there? He answered, none other than the provision of the treaty. He was next asked if he did not think it would be better to receive a statement of their reasons for not receiving Mr. Harris, and take him away until some future time when more urgent reasons might exist. The Commodore replied that he had no discretion but to obey his orders. They asked if he would take a communication from them to the United States government. He would, he said, take anything, but it must come through Mr. Harris. Some little difference had arisen during the conference as to the reading of a clause of the treaty. The Japanese had their copy before them. Mr. Harris remarked to them that this was a visit of ceremony, a call of the Commodore upon the Governors, and not one of business that he had not come prepared for any negotiation, but would meet them at any time they might appoint for that purpose.

The Japanese functionaries, however, seemed to be like men who had an appointed task and were anxious to rid themselves of it. They would frequently, before putting a question or proposition, read from a paper which one of them kept before him; and, during what appeared to be to them the most earnest and interesting part of the discussion, they would converse in a pleasant, smiling manner with each other, and the most earnest arguments passed through Moriama, without in the least disturbing the placidity of his countenance or ruffling the courtesy of his demeanor. It was probable that these officials had instructions from the imperial government to get rid of the American Consul General if they could without an infraction of treaty obligations and, if they could not, to make the best of the circumstances.

After this skirmishing had been protracted for some hours and they found no diversion in their favor could be expected from the Commodore, they apologized for having detained him so long, and suggested that he and the officers might at their pleasure take their leave, but would be glad if Mr. Harris and his secretary would remain and continue the negotiation. This was assented to. Mr. Harris requested me to remain over with him. The remainder of our party took their leave, accompanied by attendants, carrying their bundles of confectionery. After we had resumed our seats and refilled our pipes, the conversation was resumed by their stating general objections to receiving a Consul General. They said that Shimoda had suffered very much by earthquakes; and if an American Consul came, a Russian and a French one might come, and this would involve a great deal of trouble and expense.

They were told that Shimoda was the place of their own appointing, that any agreement they had with the Russian and French was of their own volition, and should not interfere with our admitted claims, and that no expense would be imposed upon them by our consulate, which bore its own expenses. It was then objected that there were additional articles appended to the treaty which had not been ratified, that when these articles were ratified, an ambassador would come out with them and after that, it would be time enough to receive a consul. It was replied that those articles were merely explanatory of the treaty and needed no ratification; but that if they were, no ambassador would come with them, as they would be sent to the Consul General; and this was another of his functions, the transmission of communications of his own government to that of Japan. They now said they would receive Mr. Harris temporarily, and as there were no quarters suitable for him, they would accommodate him in the temple at the opposite village.

The Japanese made the temple, whose roof could be seen from the deck of the vessel, rising against the dark green of a mountain back of the village, suitable for the abode of the new consul general. The carpenters of the San Jacinto erected before it a flagstaff for the first American flag which was to fly as a permanent emblem on the shores of Japan. The diplomatic proceedings having ended the San Jacinto steamed away from Shimoda bound for Shanghai, "and as her dark hull foamed through the waters without a sail set and rolling forth volumes of black smoke, she presented a sight for many an evening's future gossip in the mountain villages."

After spending some time at Shanghai, the animosity of the Cantonese toward all foreigners became so evident that Commodore Armstrong hurried with the San Jacinto to the scene of hostilities. On the 8th of November, 1856, he arrived in Hong Kong where the U. S. S. Portsmouth and the U. S. S. Levant were at anchor. This little fleet to be near the scene of hostilities went up the Pearl River to Whampoa, the nearest anchorage to Canton, and not knowing to what extent American interests in that city might be endangered, a force of seamen and marines was sent to Canton.

On Saturday, November 15, 1856, a party of officers from the American squadron was going to Canton in a small, unarmed ship's boat. As they approached a point in the river defended by four very strong and heavily armed granite forts, they were fired upon by the Chinese who occupied them. This outrage required a prompt lesson and as the water was too shallow to permit the San Jacinto to ascend the river, the Commodore on the following day transferred his flag to the Portsmouth and, with that ship and the Levant, attacked the forts. Dr. Wood has left the following account of this engagement which is now quite forgotten:

Very early on the morning of Sunday, November 16, Lieutenant James C. Williamson, of the San Jacinto, and Mr. Ayres, the pilot, were sent, in our fourth cutter, to sound the channel toward the forts; and at the same time an order was sent around the forts, by a branch of the river, for the return of the detachment sent the day before to Canton. The busy note of warlike preparation, the getting up and passing ammunition, the transfer of men to the two ships, were in strong contrast with the sacred character and habitual usages of the day, and our Chaplain, the Rev. Robert Given, who had joined us, for the first time, the day before, found that his first message of the glad tidings of great joy, and of peace and good will amongst men, must silence its soothing sound before the clatter of arms and death-dealing arrangements.

As with these occupations the morning wore on, some anxiety began to be felt for the return of Lieutenant Williamson, in the fourth cutter, which seemed unusually delayed. At last, however, she was seen approaching, and as she neared, the form of a dead, or wounded, man lying in her. It was that of Edward Mullen, the coxswain, who, while standing in the bow of the boat sounding, had his head carried away by a round shot from one of the forts. As the mangled trunk was passed over the ship's side, the indignation and spirit of vengeance were roused to the highest degree of excitement, and were eloquently manifested by looks and fierce murmurs, although discipline prevented its violent expression. There was now only one course left.

Commodore Armstrong, with his secretary, Mr. Van Den Heuvel, Lieutenant Rutledge, of the San Jacinto, Assistant Surgeon Daniel, who requested to accompany me, and I, went on board the Portsmouth. Here, now, we experienced one of those embarrassments which arise from the exceedingly injudicious nature of our squadron on the coast of China. In the rapid tide currents of the river, our sailing vessels were comparatively unmanageable, and the steamer San Jacinto was too heavy to ascend to the barrier. It could hardly be expected that peaceful merchant steamers could be induced to tow ships-of-war under the guns of hostile fortresses. However, we did employ the steamer Willamette, commanded by an American citizen, Captain Curry, of Savannah, Georgia, and the little American steamer Kum Fa, of which one of her owners, Mr. Cooke, also an American, took charge.

It was fortunate that we could procure two vessels under the American flag, for that of Portugal could not compromise its neutrality by coming into our employ, and that of England would have identified us with the English quarrel, and these were all the flags covering the steamers of these waters.

About two o'clock in the afternoon, the Portsmouth in tow of the Willamette, the Levant in that of the Kum Fa, we started for the scene of action, which we reached in about an hour, when the Willamette cast us off, within five hundred yards of a fort, one of the largest, lowest down the river, on its left bank.

It was a beautiful, soft afternoon, like those of our Indian summer; not a breath was stirring, and the river flowed by without a ripple. All nature seemed to rest in sleepy repose, and tune the heart to peace. At one moment the long granite walls and dark embrasures of the forts, without sound or stir, gave effect by their unnatural repose to the prevailing stillness and quiet—the next, the whole scene shook with noisy animation, the belching of fire from these embrasures, the roar of the guns and the hurtling of the grape and round shot around the Portsmouth before her anchor had been let go, were mingled with the loud and clear orders incident to the preparation on our deck for bringing the ship into action. The Chinese had boldly begun the war.

There was a significance in the crack of these guns and the whistling of the shot, beyond that of their destructive association. There was no waiting for explanation, no delay to see our purpose; but, on the contrary, no choice left us. Here was stern, defiant and unmistakable war. I felt my respect for our enemy rise with this reception of us, and, at the same time, I confess to an indignant wish to see it returned with vigor.

I have no wish to give a dramatic exaggeration of the scenes of our conflict with the Chinese, but I feel that there is a difficulty in giving a truthful representation of them to those who are accustomed to the mistake of regarding the Chinese as destitute of courage or military art. It is true that the resulting loss of life [to the American forces] would seem to indicate a contest of no great difficulty, but all agree that the little loss of life, under the circumstances, is mysterious and inexplicable. There can be no mistake about the Chinese standing to their guns and fighting their forts well against the more destructive machinery of their enemies. In some of these recent conflicts with the English, as I was told by a British officer present, they stood to their guns on board the junks until they were cut down at them. There can be no mistake about the hazard of a small body of foreigners pulling on shore in boats right in the face of the fire of these heavy fortresses, and marching up to them, still in the face of that fire of grape, gingals, and rockets, over muddy swamps and ditches. That they were not all swept away can only be accounted for, by the fact that the Chinese, having fixed the elevation of their guns, had not ready means of altering it, and this elevation was generally too great. Their great disadvantage was the want of explosive shell.

Finding that their fire from the walls did not annihilate the small body of men approaching them, they generally fled from a hand-to-hand conflict. I do not regard this as a want of ordinary personal courage. Had their assailants been Chinese, the parties would have met, as they often do, to the great loss of life. But they have not yet got rid of that mystical exaggeration of the prowess of the bearded barbarian which strikes them with a panic dread of personal contact . . . The small effect of the fire from the walls, so inexplicable, and so cheering to the assailing party, was equally mysterious and proportionably discouraging to those defending the walls.

When the fire first opened from the forts, Commodore Armstrong, with his staff, and the Rev. Mr. Macy and Purser Dobbin of the Portsmouth, were standing on the poop, and so thickly came the grape, that a little greater depression of the guns must have swept it.

Without steam, without wind, in a narrow and unknown channel, it was some time before the Portsmouth could bring her guns to bear and open her fire, being all the time exposed to that of the fort, but when she did, at about half past three, the roar of her heavy and effective battery, and its quiver through the ship, was cheering and consolatory. Although Captain Foote fought his ship himself, the Commodore remained on deck, a spectator of the engagement; and to those who had nothing to do but look on, it was a great satisfaction to observe the collected coolness and the perfect discipline of both officers and men, the more remarkable as the officers and crews of two ships, who now met for the first time, were working together, and many, if not most of them, for the first time in their lives under fire; this too, in a service which had abolished the lash, as a means of discipline, five years before.

The Levant, most unfortunately, had run on some rocks, about a mile below; and could not come into the action, much to the annoyance of all on board, whose only consolation was in marking the efficiency of our shells. They were also gratified by seeing how wonderfully we escaped the hostile shower, for, as one of her officers subsequently remarked to me, "the water about you was tossed like snow." In the subsequent engagements the Levant, by her prominent position and efficiency, made up for this afternoon's misfortune.

The Portsmouth kept her broadside upon the nearest fort by means of a spring upon her cable, but this, in the course of the action, unfortunately came up, and she tailed round with her stern upon the fort, thus losing, in some degree, the efficiency of her fire, and became exposed to the raking of that of the fort. It therefore became necessary to tear away the cabin, in order to run a gun out of the stern ports. Whilst this was going on, a thirty-two pound shot came directly into the centre of the cabin, carrying away the right arm and dreadfully crushing the right hip of Patrick Melvin, a marine.

He was at once carried down to the sick bay, where the surgeon of the Portsmouth amputated the arm and made such surgical appliances as the case demanded. From the cabin to the sick bay was an immediate transition from the excitement to the horrors of war. Its gloom was more shown than dispelled by candles. The blood from the wounded man damped his pallet and the deck, while his groans mingled with the crash of the guns directly overhead, the more impressive from being so near and yet unseen.

About dusk, the Commodore feeling anxious about the Levant, had a boat manned and pulled down to her, accompanied by his secretary and myself. As we left the ship, it being dark enough to make the flashes of the guns quite bright, the cross-fire between the ship and fort had a very good effect. That of the fort was very much slackened and before we reached the Levant ceased entirely.

It was the Commodore's purpose to have the Levant kedged up against the ebb tide, but before we reached her we met, through the gloom of the night, a long line of boats towing her up. Upon getting on board we found her presenting all the discomforts of a man-of-war ready for action, and very much crowded with men and officers, the cabin torn away, and the ward-room all aslop from wetting down the decks while passing powder.

It has been originally intended, after the nearest fort had been silenced, to land and assault it; but as the night came on dark and rainy and we had no guides nor any one acquainted with the plan of the fort or the nature of the surrounding ground, as we were entirely ignorant of the extent of the Chinese force, or their facilities for assailing our necessarily small landing party from ambuscades, Commodore Armstrong gave orders that no landing should be attempted that night.

We all, commodore, captains and officers, sat down to supper in the Levant's ward-room, and upon this occasion I could but remark how the conventionalities of rank, which separate in peace classes of officers into messes, were all swept away by the first exigencies of war—the very emergency for which it is all intended as a means and a preparation.

The Portsmouth was still out of position, and it was of course expected that with the coming day the forts would reopen their attack upon her. At a little after one o'clock on Monday morning we returned to her, and as we drew near we could see, by the gray light of a clouded moon, the little steamer Kum Fa, Golden Flower, busily at work endeavoring to get the ship into an effective position. The crews of the two ships had now been steadily at work, from Saturday afternoon until this Monday morning, on the preparations for the attack and in working the ships; and those of the Portsmouth, all of Sunday afternoon in fighting the guns. All Sunday night both crews were at work and no murmur or objection came from them. When I got down on the berth deck of the Portsmouth it was pitiably picturesque to see the groups who, temporarily relieved from labor, seemed to have fallen asleep in the air and then to have sunk in a heap upon the deck.

I rolled up my coat for a pillow, and got an hour's sleep on a mess-chest among the men. With daylight came a mizzling rain, but still the forts did not reopen their fire, fortunately for us, for with the strong tide ebbing and flowing, it seemed impossible to get the ships into position and keep them so. Nearly all day the Portsmouth lay aground, and entirely at the mercy of the forts . . . Still, as Monday wore on, they remained passive and silent. This course upon the part of the enemy seemed to call for a change of action on ours. It will be remembered that we came up to the attack to redress our injury and insult, but ignorant of the motives and authorities which caused it.

The present silence of the forts might arise from their inability to continue further hostilities, and that nearest us was seen to be very much broken down and dilapidated, in which case sufficient correction had been inflicted. Or else, having made the first assault in a mistake, the authorities had determined to refrain from further contest. In either case the cessation of hostilities during Monday, afforded a favorable opportunity for opening a correspondence with the Chinese authorities to ascertain whether we were to be at continued war, or our difficulty was to terminate with this correction of the insult to our flag.

For the purpose of opening such a correspondence with the Chinese Imperial Commissioner, Commodore Armstrong returned with his staff to the San Jacinto, at Whampoa, leaving Captain Foote in command, and with the orders to get and keep the ships in efficient position, but to make no attack upon the forts unless provoked to do so.

On the afternoon of November 18th, the Commodore received word that the enemy was no longer quiet and inactive, but was renewing and strengthening his works, erecting a temporary battery near the ships, on which was mounted a gun of large calibre, trained directly upon the Levant's quarter.

This was a condition of things the reverse of that upon which the cessation of hostilities had rested. It was renewed aggression, and therefore Commodore Armstrong at once said to Commander Foote, "that, pending negotiations he was unwilling to take any aggressive steps without sufficient cause," but these hostile movements on the part of the Chinese, Commander Foote was directed to prevent by such measures as his judgment might direct, even if they led to the occupation of the forts.

Before he was aware that such instructions had been sent him, Captain Foote wrote for authority to take these very steps, and saying that his force was sufficient for any orders the Commodore might give. These instructions were sent him on the 19th of November.

Early on the morning of the 20th, our ships were again at work; we could distinctly hear the report of the guns and see the smoke rising over the treetops. At eleven A.M. the look-out at the mast-head reported that the boats were landing to attack the forts, while one of the ships was shelling. In half an hour more all firing had ceased. About two in the afternoon the Kum Fa was seen approaching from the scene of conflict, and, we feared, to bring some killed or wounded ship or messmate. Fortunately our apprehensions were unfounded—she came for a supply of shot and shell. The largest and nearest fort, that which sustained the bombardment of the Portsmouth on the 16th, had been for three hours in our possession, and was then undergoing the work of demolition. The crew of the Kum Fa were quite worn out with their continued labors, and being Chinese, objected to doing such duty as towing our ships under the fire of the forts, not upon any grounds of patriotism but, very sensibly, because they did not ship for such hazards. Volunteers were therefore called upon from our own ship's company, and the crew, mistaking the extent to which they were wanted, made a general rush to the mast, each one urging particular reasons why he should have preference . . . As, however, only six firemen were actually wanting, these were selected.

At seven in the evening the steamer again came down with Lieutenant Simpson of the

Portsmouth to report the day's proceedings to the Commodore.

The fort taken had forty-seven guns mounted. Its walls were twelve feet thick below, supporting a projecting platform from which rose a granite wall four feet thick. The killed had all been removed from within the fort, but outside were about fifty dead soldiers and a mandarin. After taking possession of the work a hostile demonstration was made by from four to five thousand men from a neighboring village. A small party was dispatched to disperse them, and succeeded, one of our men being wounded in the leg.

Two of our boys were accidentally killed by the discharge of a Minié rifle in landing. One man was wounded by the bursting of a gun in the fort, and another was shot in the thigh. So far our loss had been three killed and four wounded. Most probably, in the shelling of Sunday and that of to-day, there have been four or five hundred Chinese killed in all the forts, so that Mullen's spirit is likely to have a large attendance in the "world of the hereafter."

By Saturday, November 22nd, the four Barrier forts as they are known to historians, were in the possession of the American forces. The question now arose—what was to be done with them?

To turn them over to the English would put us in the position of having captured them in the English interest. If we abandoned them as they were, so long as only the bare walls were left standing, the whole effect of the capture upon the Chinese government would be lost; not only so, but an impression directly the reverse of the truth would be produced. The instant we left the spot, the Chinese masses would rush in and occupy the works, hoist their dragon banners and report to the imperial court at Pekin that by their courage and skill they had expelled us, thereby increasing the arrogance of the imperial court, its contempt for us, and adding to the difficulties of future negotiation.

The destruction of the forts seemed the only safe course, but it was a tremendous labor and very distasteful to officers and men, now worn out with the constant occupation of the capture. But this course was, after some delay and discussion, determined on, and a corps of laborers, with necessary implements, were hired from the throng of unemployed merchant seamen, crowding the streets of Hong Kong.

When the last granite wall was blown to bits, peace was restored as far as the American squadron was concerned.

On Christmas day, 1856, the San Jacinto left Whampoa for Hong Kong. Here Dr. Wood was compelled, on account of the number of sick and wounded, to secure a hospital on shore, and was fortunate enough to obtain one in charge of an Italian priest, the worthy Father Geronimo. It stood on a hillside, in a remote part of the city, and was surrounded by a dense Chinese population.

"It was morning of congratulation when the night had passed without any realization of the existing apprehensions of attack by the Chinese. Our situation was so exposed at the hospital, and our wounded, our one-armed and one-legged men, so defenseless," writes Dr. Wood, "that a part of the Marine Guard was stationed there in command of Captain Simms of the Marine Corps."

Under date of January 15, 1857, Dr. Wood chronicles the following event:

> The breakfast in the hospital wards was an hour or two before my own, and soon after it had been served the hospital steward rushed into my room saying all the men in the hospital were poisoned. I hurried in and found it true. On both sides of the long ward the men were suffering violent and distressing illness, and all naturally in a great state of alarm. There was only one exception to the general sickness, and that man was suffering from lockjaw in consequence of a rocket wound.
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> I supposed the cause of illness was local, confined to our own establishment—the Chinese coolies were suffering as well as our own men. The cook, a Chinaman, was very much frightened and agitated. In the course of two hours, by the use of appropriate remedies, the men were all relieved and quiet, and Captain Simms and I went to our breakfast, taking the precaution to make our own tea. By a most trivial and accidental occurrence neither of us ate any bread which was supplied us from an outside bakery; and it was only after our own breakfast

my attention was called to the fact that the lock-jawed man had escaped; and he alone had eaten no bread. By this time, however, most of Hong Kong had breakfasted, and I received a hurried call from the ship-builder's establishment on the opposite side of the street. They were all, European workmen and Chinese laborers, as my hospital had been two hours before. I had scarcely prescribed for them when a sedan chair came for me to hurry up to a friend's commercial establishment a mile or two up town. I found them in like condition, including the commander of a Russian man-of-war staying with them.

All Hong Kong was poisoned, from the governor and family down, and my honest friend, the gentlemanly baker, Essing, with all his establishment, was arrested for the crime. The supposed plan was to poison all they could, and then take the city. Essing was the proprietor of the largest baking establishment in town, worked by expensive machinery. He supplied the city, the shipping, the troops. In the first indignation it was proposed to execute him summarily, but law and order prevailed, and he was committed for trial. I carefully studied the trial and came to the conclusion that he had no knowledge of the matter or participation in it. The poison, arsenic in large quantities, was introduced into the bread by two of his workmen, who made their escape.

The San Jacinto remained at Hong Kong throughout the year, 1857. The commander-in-chief, Commodore Armstrong, broken in health, made application for relief from his duties. He was informed by the Navy Department that he might return to his home by the overland route, "a hard journey for an old and disease-enfeebled man." The departure of the Commodore resulted in the issue of the two following orders to Dr. Wood:

U. S. Frigate, San Jacinto,
Hong Kong, 29 December, 1857

Sir:

Having received orders to return to the United States by the overland route, I do not feel competent to do so in my failing state of health without a medical attendant, you will therefore transfer the medical charge of this ship by the 12th of January, 1858, to the senior Assistant Surgeon and prepare to accompany me by the next steamer.

I am very respectfully,
Your Obdt. Sevt.
James Armstrong,
Flag Officer, U. S. Navy Forces East India and China Seas

Fleet Surgeon
Wm. Maxwell Wood

U. S. Flagship San Jacinto.
Hong Kong, 29 January, 1858

Sir:

You will proceed with me by the overland route via England to New York; and upon your arrival at New York you will report yourself by letter to the Honble. Secretary of the Navy.

I am,
Very respectfully,
Your Obdt. Sevt.
James Armstrong.
Flag Officer, Comdg. U. S. Naval East India and China Seas

Fleet Surgeon
Wm. Maxwell Wood
U. S. Steam Frigate San Jacinto,
Hong Kong

On the 29th of January, 1858, Dr. Wood left the San Jacinto with the Commodore, boarded the steamer Ottawa and began their homeward journey which ended at New York, April 29, 1858.

The pleasure of the journey home through Europe, however, was marred for Dr. Wood by a trick of the comptroller of the Treasury who decided that inasmuch as he had no orders from the Navy Department he was entitled only to leave-of-absence pay from the date he left the San Jacinto until he reached New York.

The San Jacinto afterwards attracted public attention when her commander, Captain Wilkes, stopped the British liner Trent upon the high seas, seized the Confederate senators Mason and Slidell with their secretaries, who were making their way to England on a diplomatic mission for the Confederacy, and carried them as prisoners of war to Boston.

On reaching New York, Dr. Wood proceeded to his home in Erie, Pennsylvania, and on August 15, 1858, he was assigned, once more, to duty on the U. S. S. Michigan, stationed at that city. While attached to this vessel he wrote and published the account[12] of his voyage to the Far East and without a doubt delighted many readers with descriptions of his travels.

He remained on duty at Erie until January 7, 1862, when he received an order detaching him from the Michigan and directing him to report to Commodore Garret J. Pendergrast at Philadelphia, "for duty on board the U. S. Steam Sloop of War Hartford, as Fleet Surgeon of the Western Gulf Blockading Squadron." He reported for duty January 15, 1862.

A few months later we find him transferred to the flagship Minnesota. The following report of a sanitary inspection of the James River Flotilla, which is the only official document of the civil war period from the pen of Dr. Wood on file in the Navy Department library, is of interest as it shows the unsanitary conditions under which the little vessels composing the Flotilla operated.

U. S. Flagship Minnesota,
Off Norfolk, Va., Aug. 2, 1862.

Sir:

I have the honor to report that in obedience to your order of the 25th ult. directing me to make a medical and sanitary inspection of the James River Flotilla—I ascended that river on the 28th ult. and upon reporting to Commodore Wilkes, he promptly placed at my disposal the Steamer Satellite in which I visited the principal vessels of the Flotilla, and conferred with the commanding and medical officers upon the subject of the duty entrusted to me.

I have the gratification to report that the health of the Flotilla was much better than I expected to find it, the sick list of the day being generally small, and in two instances there were none sick to report; all the most sick had been sent the day before to the hospital at this place.

The prevailing acute diseases, and those against which precautions are most necessary, were Diarrhoea, Dysentery, Typhoid fever and Scurvy. The first three of these diseases may be expected to be much more prevalent during the current and next months.

There are in reality no suitable accommodations for sick on board these vessels, and both on account of the sick and from the embarrassment they cause the vessels in which they accumulate, they should be promptly removed to the hospital accommodations of which we have command.

There are frequent and abundant opportunities of making these transfers by means of the daily Army and Mail Steamers leaving Harrison's Landing (the central depot and point of communication with the squadron) for Old Point, there being also at least twice a day communication between Old Point and this place. But it is necessary that there be some systematic arrangement by which these means of communication should be made available for the sick, otherwise they will accumulate in the Squadron.

It would be still better if a tug or small steamer could be sent once or twice a week, as occasion requires—with the sick directly to this place, the run would be about the same as to Old Point, and the annoyance of a double transfer avoided.

Commodore Wilkes suggested the expediency of having a separate hospital for his Flotilla at Newport News—at the mouth of the James River. Although there would be some advantages in it, I doubted whether they would compensate for the labor and expense of organizing a new hospital establishment, especially as the necessity will be terminated by a few weeks time.

One of the great complaints of the commanding and medical officers was the want of fresh provisions and vegetables. Those vessels which have been in the river longest have had this kind of diet but once in nearly three months, and in them scurvy is beginning to make its appearance. The facility for supplying the Flotilla with such articles is all that can be desired, and I would earnestly recommend that they be furnished at least twice a week. Even though the material effect of this change of ration might not be certain, the moral effect upon men engaged in this depressing service of having the food they prefer, would be of a sanitary character. If this arrangement is sanctioned—the tug which would come twice a week to Old Point for the provision could bring the sick to the hospital here.

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[12] Fankwei.

The river water is turbid and objectionable—tending to produce diarrhoea. There is no reason for its use being continued. I am informed by Chief Engineer Loring that any of the steam vessels can condense one thousand gallons a day of pure water, and that if condensers are wanting to any of the vessels they are now on hand here and ready to be supplied. Any one vessel would make largely more than her own wants. I noticed during my inspection that the steamers, with small crews, chartered by the government, get all the water they need simply by a drip pipe from the safety valve.

I think it would tend to the health of the Flotilla to make arrangements for an abundant supply of this water as a drink.

Experience has shown that those malarious diseases which are most influential in the autumnal months are much diminished by the use of a prophylactic tonic. I would therefore advise that until the appearance of frost, there be served to the ship's companies every morning before breakfast quinine in wine or whiskey, under the apportionment and direction of the medical officer of each vessel. Every real purpose would be met by the quinine alone, but the medium would render it less objectionable to the seamen. Upon my return to Hampton Roads I found there twelve vessels of the mortar fleet which had recently arrived from the Mississippi, and upon visiting the Fleet, I ascertained it to be in a most deplorable condition. In some of the vessels nearly half the ship's complement was prostrated by disease, two men had just died. In one vessel the officers with a considerable humanity had relinquished the ward room to the sick who were lying over the floor of the apartment. There were but two medical officers in the whole fleet, and they unfortunately were on board the same vessel, the remainder being in charge of ignorant stewards, who were generally destitute of remedies. Upon reporting these facts to Admiral Goldsborough, he procured a special steamer for the purpose and directed the sick, one hundred and three cases, to be brought immediately up to the Naval Hospital at Portsmouth now in charge of the Army. They were all received by the officers in charge with the assurance that they would do the best for them they could, although they had no accommodation at their immediate disposal for such a number. It is much to be feared that the wants of this squadron will exceed the full capacity of the naval hospital. Cases coming to us singly or in small numbers are still sent to the temporary hospital at Fort Norfolk.

Very respectfully
Your Obedt. Servt.
Wm. Maxwell Wood,
Fleet Surgeon

Hon. Gideon Welles,
Secretary of the Navy,
Washington, D. C.

Respectfully Forwarded.
Goldsborough,
Rear Admiral,
August 2/62.

Dr. Wood remained on duty as fleet surgeon on the Minnesota until March 7, 1864, when he was detached and placed on waiting orders at his home in Erie. On August 21, 1864, he was given temporary duty on the U. S. S. Michigan where he remained until the following May.

On May 18, 1865, we find him at the Navy Yard, Boston, a member of a board of investigation. About this time, Dr. Wood established a residence at Owing's Mills in Baltimore County, Maryland. From here he departed on several tours of temporary duty until he was appointed chief of the Bureau of Medicine and Surgery. Thus, in June, 1865, we find him on duty as a member of a board at Annapolis; in January, 1868, he was at the Naval Hospital, New York, as a member of an examining board; in October of that year he went to the Navy Yard, Norfolk, as member of a retiring board. New Year's Day, 1869, brought him orders to go to the Navy Yard, New York, as a member of a retiring board. On March 13, 1869, he acknowledged the receipt of orders to report for duty at the Naval Academy, and in April of that year he was ordered to Annapolis as a member of the Board of Visitors of the Naval Academy.

On June 28, 1869, from Owing's Mills, Maryland, he wrote to the Secretary of the Navy acknowledging his appointment as chief of the Bureau of Medicine and Surgery. This is the last letter written by him on file in the library of the Navy Department.

The naval appropriation act passed by Congress, March 3, 1871, provided that "the chiefs of the bureau of medicine and surgery, provisions and clothing, steam engineering, and construction and repair, shall have the relative rank of commodore while holding said position, and shall have, respectively, the title of surgeon-general, paymaster-general, engineer-in-chief, and chief-constructor." By reason of the passage of this act Dr. Wood became the first surgeon-general of the Navy.

He served as surgeon-general until October 25, 1871, although he was placed upon the retired list for age, May 27, 1871. After leaving the Bureau of Medicine and Surgery he served as Medical Inspector-General of hospitals and fleets from November 2, 1871 until April 1, 1873. From that date he enjoyed the quiet of retirement at Owing's Mills until his death, March 1, 1880.

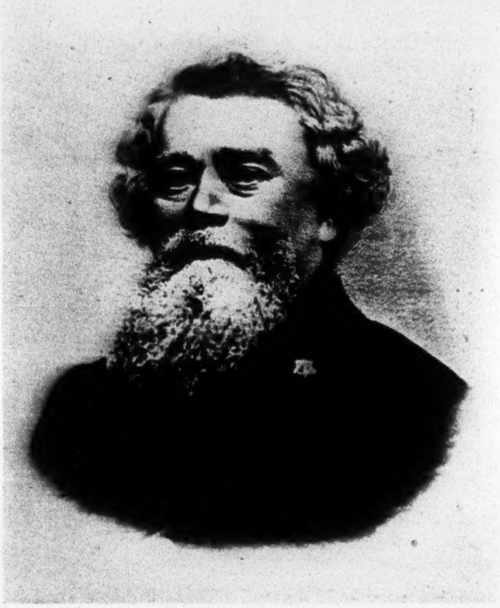

Fig. 3. William Maxwell Wood As He Appeared When Surgeon General of the Navy.

A BIOGRAPHIC HISTORY OF PHYSICAL DIAGNOSIS*

By WILLIAM SHAINLINE MIDDLETON

MADISON, WIS.

THE actors in the old tragedies piped their iambics to a tune, speaking from under a mask, and wearing stilts and a great head-dress. Twas thought the dignity of the Tragic Muse required these appurtenances . . . The muse of History hath encumbered herself with ceremony as well as her Sister of the Theatre . . . She busies herself with the affairs only of kings . . . Why shall History go on kneeling to the end of time? I am for having her rise up off her knees, and take a natural position; not to be forever performing cringes and congees like a Court-chamberlain, and shuffling backwards out of doors in the presence of the sovereign. In a word, I would have History familiar rather than heroic.[1]

Fortunately the student of medical history is beset by no such strictures as confronted Henry Esmond in the syncophantic days of Queen Anne. The field of medical science has been enriched by men of lowly as well as lofty station, plodders as well as leaders in the profession. In the development of physical diagnosis, on occasions even the layman has made notable contributions. To evaluate the services of all contributors to physical diagnosis were to fill the bed of Procrustes. In general, periods of greatest advance in medicine have found their origin in the inspiring atmosphere of an outstanding physician or group of medical men, and the inertia of their contemporaries marks such men as pioneers. In a word, posterity may date a great advance in medicine from the life or contributions of a pathfinder in a given field, and yet a cross section of the profession of his day probably will show a marked discrepancy in the progress of the mass. However, the skepticism of physicians is proverbial. Laënnec wrote: "For our generation is not inquisitive as to what is being accomplished by its sons. Claims of new discoveries made by contemporaries are likely for the most part to be met by smiles and mocking remarks. It is always easier to condemn than to test by actual experience." Thus the wheels of medical progress are slowed.

Tradition traces the beginnings of physical diagnosis dimly back through the centuries before Christ to the empiricists of Egypt and India. However hazy may be this evidence, Aryan practitioners utilized palpation, percussion and auscultation as early as the second century A.D., according to Charaka. Antedating this period by more than five centuries, however, physical diagnosis may be said to take its inception in the Golden Age of Greece, and its founder in the person of the Father of Medicine, Hippocrates.

Looming up through the centuries no figure in medicine has wielded a more powerful influence for the advancement of physical diagnosis than Hippocrates (460–370 B.C.). A contemporary of Pericles, Sophocles, Euripides, Socrates, Plato, Herodotus, Thucydides and Phidias, he was derived from an Asclepiad family. Inheriting the profession of his father, Hippocrates availed himself of the records of generations of priests in the Asclepion of Cos. Certain biographers accuse him of destroying the library of the temple at Cnidus after abstracting its records for his personal use. A peripatetic teacher and practitioner he must have been, since he is credited with residence in Thrace, Delos and Thessaly. His advice was sought by the court of Persia and a plague at Athens was stayed through his efforts.

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*Read before the University of Wisconsin Medical History Seminar, Jan. 23, 1924.

NOTE: Grateful acknowledgment is made for the assistance rendered by Dr. William Snow Miller in the preparation of this paper. The photographs are from the Library of the College of Physicians, Philadelphia, and the Surgeon-General's collection.

[1] Thackeray, W. M. Henry Esmond.

In a period when empiricism and charlatanry were rampant, Hippocrates had the courage to oppose them openly. *Vis medicatrix naturae* has a peculiarly Hippocratic note. Only a courageous soul would have said in his period of the "Sacred Disease:"

> It appears to me to be nowise more divine nor more sacred than other diseases, but has a natural cause from which it originates like other affections. Men regard its nature and cause as divine from ignorance and wonder, because it is not at all like to other diseases.

Hippocrates was a keen observer of disease and its manifestations in the human subject. His patent honesty and detailed accuracy in describing deviations from the normal have made his contributions immortal. The authenticity of certain works attributed to Hippocrates has been contested; but those of especial importance in the development of physical diagnosis, "Book of the Prognostics," "Book of the Epidemics" and the "Aphorisms," are believed to be from his hand and are a bountiful storehouse of information. Certain quotations will serve to support this statement.

The following description of impending dissolution is to this day termed the Hippocratic facies:

> A sharp nose, hollow eyes, collapsed temples; the ears cold, contracted, and their lobes turned out; the skin about the forehead being rough, distended, and parched; the color of the whole face being green, black, livid, or leadcolored.

When the sclera of a sleeping individual is exposed, Hippocrates gave the following prognosis:

> It is to be reckoned an unfavorable and very deadly symptom, but if the eyelid be contracted, livid or pale, or also the lip or nose, along with some of the other symptoms, one may know for certain that death is close at hand. It is a mortal symptom, also, when the lips are relaxed, pendant, cold, and blanched.

Remarking on the position of the patient in bed, Hippocrates wrote:

> And if the patient incline forward, and sink down to the foot of the bed, it is a still more dangerous symptom.
>
> When in acute fevers, pneumonia, phrenitis, or headache, the hands are waved before the face, hunting through empty space, as if gathering bits of straw, picking the nap from the coverlet, or tearing chaff from the wall—all such symptoms are bad and deadly.
>
> Respiration, when frequent, indicates pain or inflammation in the parts above the diaphragm; a large respiration performed at a great interval announces delirium; but a cold respiration at nose or mouth is a very fatal symptom.

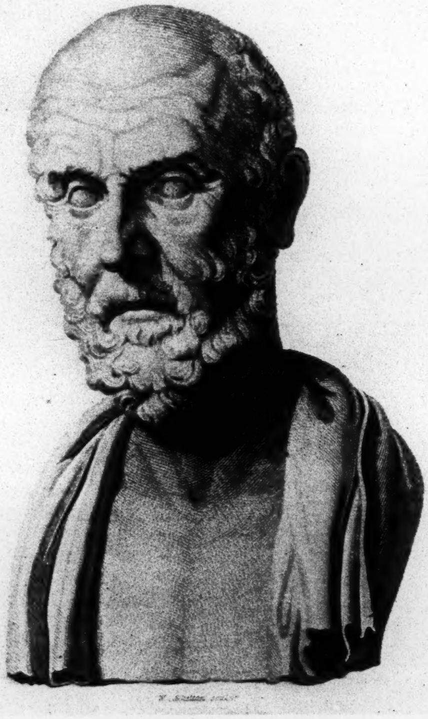

FIG. 1. HIPPOCRATES (460–370 B.C.).

The first reference to clubbed fingers is found in Hippocrates' statement that "the nails of the hands are bent" in empyema. Into the quotation: "the respiration throughout like that of a person recollecting himself, was rare and large," has been read Cheyne-Stokes' type of breathing. The subsequent reference to "breathing rare, large, at intervals and again hurried respiration" in a brain case, antedated Biot. Convulsions affecting the contralateral extremities were remarked subsequent to head injuries. Globus hystericus was accurately described. Coma vigil found its origin in his description of a "coma, in which they get no sleep." Hippocrates recognized the connection between fistula-in-ano and phthisis. He furthermore wrote: "The form of body peculiarly subject to phthisical complaints was the smooth, the whitish, that resembling the lentil; the reddish, the blue-eyes, the leucophlegmatic, and that with the scapulae having the appearance of wings." Aphonia was recognized as an accompaniment of tuberculosis.

Hippocrates' contributions to the advancement of physical diagnosis were not limited to inspection. Palpation of the abdomen had revealed to him enlargement of the liver and spleen, and it is certain that he practiced immediate auscultation in a rudimentary fashion. The succussion splash was thus elicited: "You will place the patient on a seat which does not move, an assistant will take him by the shoulders, and you will shake him applying the ear to the chest, so as to recognize on which side the sound occurs." Hippocrates unquestionably recognized râles. In one passage he remarked: "You shall know by this that the chest contains water and not pus, if in applying the ear during a certain time on the side, you perceive a noise like that of boiling vinegar." Laënnec interpreted this observation to signify either normal respiration or respiration together with crepitous rhonchi. On the other hand Stokes supported the accuracy of Hippocrates' conclusion, stating that congestion of the lung was more apt to accompany hydrothorax than empyema by reason of the circulatory origin of the former.

Hippocrates' art and philosophy in the practice of medicine may be gathered from the following quotation:

> The physician must be able to tell the antecedents, know the present, and foretell the future—must mediate these things, and have two special objects in view with regard to diseases, namely, to do good or do no harm. The art consists in three things—the disease, the patient, and the physician. The physician is the servant of the art, and the patient must combat the disease along with the physicians.

Plato alone of Hippocrates' distinguished contemporaries deemed him worthy of remark, and yet in all the history of medicine no individual has ever approached the high station of Hippocrates.

The passing of Hippocrates (370 B.C.) initiated a seemingly interminable period of inactivity in the development of physical diagnosis. Unquestionable evidences of retrogression in the practice of medicine from the high ideals of Hippocrates are met on every hand. Disease was seen "through a glass, darkly." The diagnostic armamentarium of the practitioner was limited to inspection and the subjective examination of the patient. The teachings of Hippocrates were disregarded and medical progress was halted for generations by theorists and empiricists. Humoralism, solidism and pneumatism were more pregnant subjects for dissertation than the diagnosis of disease and the care of the sick. Such men as Celsus and Aretaeus adorned the profession in the reigns of Tiberius Caesar and Hadrian without advancing physical diagnosis. The theories of Galen (131–201 A.D.), flimsy with pragmatism, dominated medicine for many centuries. Paul of Aegina (625–690 A.D.) and Avicenna (980–1036 A.D.) in voluminous writings left only their confessions of subservience to the faulty postulates of Galen. Rhazes (860–932 A.D.) earned a high place for himself among clinicians by his accurate observations. Another period of five centuries elapsed before an outstanding physician took the scene of action. Paracelsus (1493–1541), by singular choice on assuming the chair of medicine at Basel in 1527, publicly burned the works of Galen and Avicenna. Undoubtedly, this gesture was prompted by his devotion to Hippocrates. Whatever the faults of Paracelsus, medicine owes a debt of gratitude to his memory for turning back the tide of theorism in diagnosis and aspiring to the safer ground of observation. After this picturesque figure, Thomas Sydenham (1624–89), "a trooper turned physician," stands out as the reviver of Hippocrates and as one of the greatest bedside physicians of all times. Practical clinical contact and accurate portrayal of disease mark his contributions. It may be adduced fairly, then, that only the inspiring influence of Hippocrates' teaching kept alight the torch of clinical truth through the darkest period of medical history. Whenever its light faded, some new disciple rekindled it by his enthusiasm.

The study of the pulse was neglected by physicians until Herophilus of Alexandria (335–280 B.C.). No mention of the pulse is found in the works of Hippocrates. Galen, however, established a system of medicine on the minutiae of pulse variations. The accurate timing of the pulse may be traced to Galileo Galilei (1564–1642), although Sanctorius is incorrectly credited with this contribution to medical science. Born in Pisa of a noble though impecunious Florentine family, Galileo was gifted with brilliant intellect, mechanical ingenuity and assiduous application. His father, a prominent mathematician and musician, endeavored to guide his son's training to more remunerative fields. After a preparatory course in Latin and Greek at the monastery of Vallombrosa, Galileo entered upon the study of medicine in his eighteenth year under the renowned Andrea Cesalpino (1524–1603) at the University of Pisa. The immortal observation of a bronze lamp swinging in the duomo at Pisa was but one of a series of mechanical discoveries which insidiously drew his master mind from the field of medicine into astronomy and experimental philosophy. However, this fundamental discovery of the isochronism of the pendulum was first timed by the young medical student with his own pulse and fifty years later he remarked of his astronomical clock, "My clock will not vary so much as the beat of a pulse." Galileo applied the term, "pulsilogon," to his invention. Medicine did not immediately avail itself of the obvious advantages of the pulsilogon. Another astronomer, Herman Kepler, wrote in the year 1618:

> In a healthy man, robust and of full age, in one of melancholic complexion, or in a feeble man, generally for each second there is a pulsation of the artery, with no discrimination between systole and diastole; thus there should be in one minute sixty pulsations, but this slowness is rare, commonly 70 may be counted, and in the full-blooded and in women 80, four to each three seconds. Briefly, in one hour 4,000, more or less.

Sydenham did not mention the pulse rate and Harvey (1578–1657) spoke of it but once. Morgagni (1682–1771) recorded the first example of heart-block (Stokes-Adams syndrome) with a pulse of 22 in "the sixtieth of an hour." In 1707 Sir John Floyer dedicated "The Physician's Pulse Watch" to Queen Anne with the patronizing air of a Steele, "for without health we should have no relish even for the extraordinary blessings of your reign." The watch described ran for sixty seconds. The text contains some very important observations, but the innovation was greeted with derision by the profession at large. S. Weir Mitchell aptly characterized the state of medicine in the eighteenth century: "It is observation gone minutely mad; a whole Lilliput of symptoms; an exasperating waste of human intelligence." From the extreme overzealousness of Heberden (1710–1801) in pulse study, one passes to the complete ignoring of pulse rate by Corvisart. To Louis and the Dublin school must go the credit of the routine pulse determination at a period two hundred years removed from the medically neglected discovery of Galileo

Medicine is indebted likewise to Galileo for the first contribution to thermometry. His first crude thermometer was constructed of a closed tube with a bulbous extremity. After heating this tube its opening was submerged in a vessel of water, whereupon water rose to a certain level in the tube. Having established this point, the bulbous end of the tube was grasped in the hand and the body temperature was crudely measured by the expulsion of water from the tube, lowering the fluid level. Sanctorius (1561–1636), either ignorant of or disregarding Galileo's work, devised an instrument on improved lines for recording the body temperature by the mouth and to him belongs due credit for the first application of thermometry to medicine. The names of George Martine (1702–41) and Carl Reinhold August Wunderlich (1815–77) are inscribed indelibly in the development of clinical thermometry. The ubiquitous John Hunter (1728–93) wrote his name in this field of clinical advance in 1766 by the following observation:

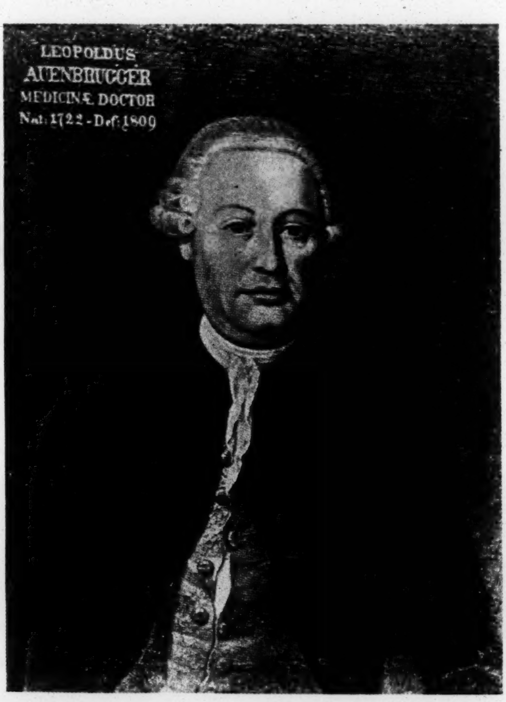

Fig. 2. Leopoldus Auenbrugger (1722–1809).

> I mentioned to Mr. Ramsden my objections to the common construction of that instrument (thermometer), and my idea of one more perfect in its nature, and better adapted to the experiments in which I was engaged. He accordingly made me some very small thermometers, six or seven inches long, not above two-twelfths of an inch thick in the stem, having the external diameter of a ball very little longer than that of the stem, on which was marked the freezing point. The stem was embraced by a small ivory scale, so as to slide upon it easily, and retain any position. Upon the hollow surface of this scale were marked the degrees which were seen through the stem. By these means the size of the thermometer was very much reduced, and it could be applied to soft bodies with much more ease and certainty, and in many cases in which the former ones could not be conveniently applied.

The evolution of the clinical thermometer is a fascinating story but too intricate for the present consideration. Suffice it to state that not until 1868 and through the offices of a contemporary clinician, Sir Clifford Allbutt (1836–), was the clinical thermometer developed in its present convenient form.

If, then, the contributions of pulse recording and thermometry be excepted, the centuries following Hippocrates were peculiarly sterile in the development of physical diagnosis. Clinical medicine itself survived only through the hardihood of Hippocrates' precepts, and such contributions as are found in the period described constitute accurate delineations of disease by masters, as Rhazes and Sydenham. Diagnosis dependent on inspection alone has been compared in efficiency to the task of the Danäides. Nor was this dark period to be interrupted until Auenbrugger unostentatiously took the stage.

Leopold Auenbrugger (1722–1809) was the son of an innkeeper of Gratz in Lower Austria. His fortunate marriage to Marianna von Priesterberg enabled Auenbrugger to complete his medical studies under the masters of the old Vienna school. Baron Van Swieten, a pupil of Boerhaave, on his appointment as court physician by Maria Theresa, had founded the medical school at Vienna under the patronage of his royal clientele. The pupil Auenbrugger, likewise, found favor in the eyes of the empress, and in recognition of his dedication of a libretto[2] to her was made Edler von Auenbrugg. This honor was chosen by the recipient in preference to a pension, since the title descended to his children, whereas the pension ceased on his demise.

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[2] The Chimney-sweep, *Der Rauchfangkehrer*.

Of Auenbrugger's medical life but little is known. Receiving an appointment as physician to the Spanish Military Hospital (1751), he shortly set about the studies on percussion which have made his name deservedly famous. A small text[3] embodied the conclusions of his long period of study. S. Weir Mitchell has written that "the genius who today invents a new forceps or a new pessary yearns for instant type, and defends his offspring with virulence." But in his prefatory remarks Auenbrugger wrote:

> In making public my discoveries respecting this matter I have been actuated neither by an itch for writing, nor a fondness for speculation, but by the desire of submitting to my brethren the fruits of seven years' observation and flexion. In doing so, I have not been unconscious of the dangers I must encounter; since it has always been the fate of those who have illustrated or improved the arts and sciences by their discoveries to be beset by envy, malice, hatred, detraction, and calumny.

Instinctively appreciating the value of his contribution to medicine, Auenbrugger nevertheless realized its defects and shortcomings.

Immediate percussion as advocated by Auenbrugger constituted striking the thorax, "slowly and gently, with the points of the fingers, brought close together and at the same time extended." He advised that a thin woolen shirt be drawn closely over the surface of the subject or that the examiner wear a glove of unpolished leather. The note elicited over the normal chest "resembles the stifled sound of a drum covered with a thick woolen cloth or other envelope." Normal variants were lucidly discussed.

> A clear and equal sound . . . indicates that the air cells of the lungs are free, uncompressed by a solid or liquid body . . . If a sonorous region of the chest appears, on percussion, entirely destitute of the natural sounds—that is, if it yields only a sound like that of a fleshy limb when struck—disease exists in that region . . . The diminution of sound was proportioned to the diminution of the volume of air contained in it.

These observations were substantiated by parallel studies of the percussion findings in cadavers into whose chests had been injected varying amounts of fluid. Auenbrugger astutely observed, "The total destitution of sound over one whole side is generally a fatal sign." He believed the enlargement of the area of "absent sound" over the heart a dangerous sign in pneumonia.

Withal, a certain naïveté characterized even the medical life of Auenbrugger, as is witnessed by the following quotation:

> When young men, not arrived at their full growth, are forcibly impressed into the military service, and thereby at once lose all hope of returning safe and sound to their beloved home and country, they become sad, silent, listless, solitary, musing, and full of sighs and moans, and finally quite regardless of, and indifferent to, all the cares and duties of life. From this state of mental disorder nothing can rouse them—neither argument, nor promises, nor the dread of punishment; and the body gradually pines and wastes away, under the pressure of ungratified desires, and with the preternatural sound of one side of the chest. This is the disease nostalgia. I have examined the bodies of many youths who have fallen victim to it, and have uniformly found the lungs firmly united to the pleura, and the lobes on that side where the obscure sound had existed callous, indurated, and more or less purulent. Some years ago this disease was very common, but it is now rarely met with, since the wise arrangement has been adopted of limiting the period of military service to a certain number of years only.

Notwithstanding repeated and laudatory references to the "Commentaries of the most illustrious Baron Van Swieten," that luminary persistently ignored Auenbrugger's discovery. Several obscure translations suffered similar fates. Indeed, either from ignorance or gross misinterpretation of the procedure and its significance, immediate percussion was virtually unnoticed by the profession until one year before the death of its discoverer. By this time, little dreaming the fame that was to be his, Auenbrugger had retired to the circle of his family and friends and to the enjoyment of music and the arts. In 1808 Corvisart resurrected the forgotten *inventum novum* and, while entirely revamping and greatly supplementing the text, magnanimously gave full credit to Auenbrugger for his services to medicine. Declining to sacrifice Auenbrugger's name to his own personal vanity, Corvisart wrote: "It is he and the beautiful invention which of right belongs to him that I wish to recall to life."

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[3] Auenbrugger, L. Inventum Novum ex Percussione Thoracis Humani ut Signo Abstrusos Interni Pectoris Morbos Detegendi, Vienna, 1761.

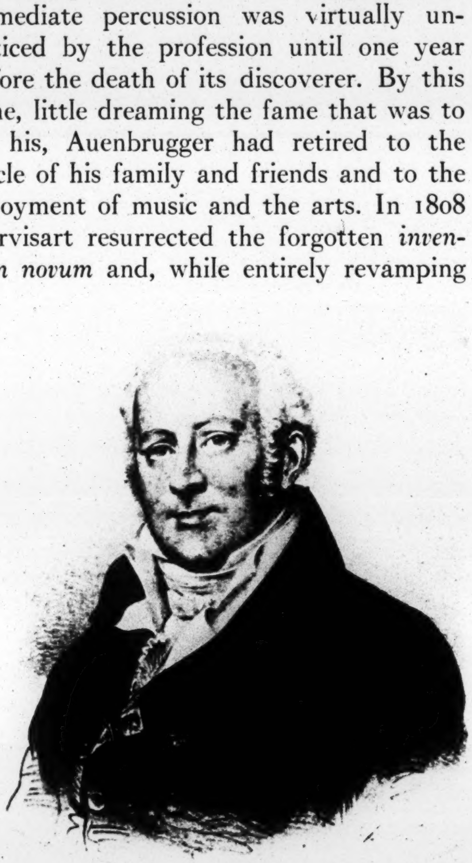

Fig. 3. Jean-Nicholas Corvisart (1755–1821).

Jean-Nicholas Corvisart (1755–1821), a native of Dricourt in Champagne, was prepared for the law. However, a trip to Paris determined a change in his plans, and medicine rather than law became his vocation. Vicq D'Azyr, Antoine Petit, Desault and Portal were among his instructors. His force of character and love of truth advanced his interests everywhere until he became professor of medicine at La Charité in 1795. He refused an appointment to l'Hôpital Necker since the patroness required that members of the staff wear wigs. Corvisart is a familiar figure in history as physician to Napoleon Bonaparte. Fearing obesity Napoleon had inquired for medical advice of his secretary, Bourrienne, who recommended Corvisart. Bourienne remarked, "He (Napoleon) appeared to derive much benefit from the prescriptions of Corvisart, whose open and good-humored countenance at once made a favorable impression on him." In his absorption in his medical work, Corvisart paid little attention to the social life of the court. He enjoyed the confidence of the Emperor without sacrificing his individuality, if the following episode be taken as a criterion:

"Sire," he exclaimed after the birth of the King of Rome, addressing himself to the Emperor, "this prince must crown all your wishes! Recall your career: in less than ten years a simple officer of artillery, then captain, general of brigade, general-in-chief, first consul, emperor, spouse of an archduchess of Austria, father of a prince. Having reached so dizzy a height of fortune, rarely attained by any mortal, I beg your majesty to stop! Fortune may turn; you may yet fall."

"That I call the speech of a genuine peasant," said Napoleon.

His true estimate of Corvisart was reserved for his intimates, "He is an honest and able man, but a little rude." It will be recalled that when Napoleon's life was attempted at Schönbrunn, Corvisart was asked by Napoleon to feel the young Staps' pulse to ascertain his state of health. Corvisart, having complied, remarked that the would-be assassin was not ill. Corvisart remained loyal to the Emperor through his declining fortunes and refused public office after his abdication.

Corvisart's greatest contribution to medicine was his revival of immediate percussion. A trained anatomist, he carried his bedside findings to the necropsy table for ultimate definition, a practice which was to lend untold impetus to the advancement of physical diagnosis and clinical medicine. His writings are among the first clinical records of physical findings specifically corroborated by necropsy. The influence of Bichat (1771–1802) was beyond a doubt reflected in this procedure. Corvisart referred repeatedly to the chest which did not sound when struck, or the "silent thorax." The normal resonance was described as like an "empty cask." His observations on circulatory conditions are still classical. He remarked that "it is clear that the majority of the individuals, reputed to have died of anasarca, leucophlegmasia, and particularly of hydrothorax, and of various species of asthmas, and singular dyspnoeas, may have perished from diseases of the heart." He differentiated active from passive aneurism (enlargement) of the heart by the presence of myocardial thickening in the former and its absence in the latter, viz., hypertrophy as compared with dilatation. Corvisart obviously practiced palpation and auscultation in his cardiac studies. He recorded that the apical impulse of passive aneurism was less firm than that of active aneurism. Furthermore the pulse of active aneurism (cardiac hypertrophy) was characterized by an inability of the examiner to "destroy its calibre or suffocate the strokes" by digital pressure over the artery. The thrill accompanying mitral stenosis was thus described, "a peculiar rushing like water, difficult to be described, sensible to the hand applied over the precordial region, a rushing which proceeds apparently from the embarrassment which the blood undergoes in passing through an opening which is no longer proportioned to the quantity of fluid which it ought to discharge." The aneurysmal thrill was also noted. Laënnec to the contrary notwithstanding, Corvisart employed immediate auscultation for the expressed purpose of determining heart sounds, which he likened to the noise of rushing water. Corvisart recognized the pathologic physiology of the circulation in right-sided cardiac dilatation as is evidenced by this passage:

> The pulmonary engorgement, which always obtains, does not permit the blood in the lungs to be perfectly and fully submitted to the reparative powers of respiration. The blood therefore flows from the lungs, and returns into the greater circulation without any perceptible alteration, viz., without having either lost or gained what is requisite during this process.

Among the cardiac irregularities Corvisart described "the pulse (that) was irregular, not coincident with the strokes of the heart." He accurately described the clinical and pathologic picture of vegetative endocarditis, but believed this condition to arise from venereal sources because of the appearance of the vegetations. The delirium of decompensation was remarked. Aphonia and inequality of the pulses were noted in aneurysm of the arch of the aorta. The soldier's patch in the pericardium was believed to represent an old scar at the site of a healed pericarditis. A characteristic story is told of his brilliancy in diagnosis. Passing a portrait one day he remarked that the subject of the same had been a cardiac case. Inquiry proved that the subject in question had in truth died of a cardiac condition.

Truly a giant among clinicians and an able diagnostician and teacher, Corvisart deserves to be ranked as the father of modern objective diagnosis. Without detracting from the services of Auenbrugger to the advancement of physical diagnosis, it is clear that, lacking the initiative and dynamic personality of Corvisart, clinical medicine would have remained dormant for a long period had its advance depended on Auenbrugger's contribution alone. Furthermore the stimulus of Corvisart's teachings drove his pupils to high achievements in medicine. A wise scientist has said, "Happy is the teacher whose pupils become masters."

If this circumstance be a measure of true happiness, then Corvisart's cup must have been full, for he numbered among his pupils Bayle, Laënnec, Bretonneau, Dupuytren and Cuvier! Corvisart died of heart disease.

The mantle so graced by Corvisart fell naturally to the shoulders of his brilliant pupil, Laënnec. To him medicine is indebted for the invention of the stethoscope and the establishment of the fruitful field of mediate auscultation. The direct method of auscultation had been practiced as remotely as the period of Hippocrates, but even this procedure was not a routine method of examination in the generations preceding Laënnec. It is said that "coming events cast their shadows before." More than a century prior to the time of Laënnec there lived in England a peculiar, experimental philosopher, Robert Hooke by name (1635–1703). Irritable in temper and deformed and unkempt in person, Hooke was perpetually embroiled in legal or philosophical controversy. Through respect to his ability or his tongue, Hooke was the recipient of many honors. Among these came a doctorate in medicine (1691) from the Doctors' Commons. A scientific dabbler, he suggested and instituted many lines of study but perfected little. In his "Posthumous Works" a most prophetic passage is found:

> There may also be a possibility of discovering the Internal Motions and Actions of Bodies by the sound they make, who knows but that as in a Watch we may hear the beating of the Balance, and the running of the Wheels, and the striking of the Hammers, and the grating of the Teeth, and multitudes of other noises; who knows, I say, but that it may be possible to discover the Motions of the Internal Parts of Bodies, whether Animal, Vegetable, or Mineral, by the sound they make, that one may discover the Works perform'd in the several Offices and Shops of a Man's Body, and thereby discover what Instrument or Engine is out of order, what Works are going on at several times, and lie still at others, and the like; that in Plants and Vegetables one might discover by the noise the Pumps for raising the Juices, the Valves for stopping it, and the rushing of it out of one Passage into another, and the like. I could proceed further, but methinks I can hardly forbear to blush, when I consider how the most part of men will look upon this: But yet again, I have this Incouragement, not to think all these things utterly impossible, though never so much derided by the Generality of Men, and never so seemingly mad, foolish, and phantastick, that as the thinking them impossible cannot much improve my Knowledge, so the believing them possible perhaps may be an occasion of taking notice of such things as another would pass by without regard as useless. And somewhat more of Incouragement I have also from Experience, that I have been able to hear very plainly the beating of a Man's Heart, and 'tis common to hear the motion of Wind to and fro in the Guts, and other small Vessels, the stopping of the Lungs is easily discovered by the Wheezing, the Stopping of the Head, by humming and whistling Noises, the slipping to and fro of the Joynts in many cases, by crackling, and the like. As to the working or motion of parts one amongst another, methinks I could receive Incouragement from hearing the hissing noise made by a Corrosive Menstruum in its operation, the noise of Fire in dissolving, of Water in boiling, of the parts of a Bell after that its motion is grown quite invisible as to the eye; for to me these Motions and the other seem only to differ secundum magis et minus, and so to their becoming sensible, they require that their motion be increased, or that the Organ be made more nice and powerful to sensate and distinguish them (to try the contrivance about an artificial tympanum) many cases there may be Helps found, some of which I may, as opportunity is offered, make Trial of, which, if successful and useful, I shall not conceal.

Needless to add, no practical conclusions of clinical or scientific value succeeded this flight of fancy. By the same token which spares Laënnec a rival for the priority of discovery of mediate auscultation, in as divergent fields as physics and aeronautics, Sir Isaac Newton and the Wrights are relieved of a serious competitor for their well-deserved laurels.

René Théophile Hyacinthe Laënnec (1781–1826) was born of poor but intellectual parents in Quimper, Brittany. The family led a precarious existence by reason of the uncertain status of the father's governmental appointment. The early education of Réné was entrusted to an uncle who served as priest to a nearby parish. The Revolution jeopardizing the ecclesiastic order, the further training of young Laënnec devolved on a second uncle practicing physic in Nantes. This uncle was apparently a man of some force and consequence, holding various positions of importance in the hospitals and in the University of Nantes. Serving as preceptor to his nephew this physician encouraged particularly the pursuits of clinical observation and morbid anatomy. For a short interval young Laënnec served as assistant surgeon in the Army of the West, but in 1800 left for Paris to complete his medical studies. Falling under the spell of Corvisart and Pinel, his industry early attracted the attention of his masters and high academic honors crowned his efforts. During his first three student years at La Charité, Laënnec compiled minute histories of some four hundred clinical cases. Before obtaining his doctorate, he gave a course in pathologic anatomy which rivalled that of his friend, Dupuytren. Significantly the thesis submitted for his degree in June, 1804, bore the title, "Propositions sur la doctrine d'Hippocrate relativement à la médecine-pratique." Undoubtedly the deep reverence in which Laënnec held the Father of Medicine greatly influenced his own clinical contact. Entering the practice of medicine on graduation, his health soon failed and he was compelled to give up his special course in pathologic anatomy. To this branch he contributed the term, cirrhosis of the liver, suggested by the tawny appearance of the organ, and to a form of this condition is still applied the designation, Laënnec's cirrhosis. The sanguinary campaign of 1814 found Laënnec serving as a volunteer to the Salpêtrière, in which many of his fellow Bretons were hospitalized. His appointment as chief physician to Necker Hospital in 1816 opened the way for his surpassing gift to medicine and humanity.

The discovery of the stethoscope is so guilelessly recounted by Laënnec that the translated passage is quoted in full:

> In 1816, I was consulted by a young woman labouring under general symptoms of diseased heart, and in whose case percussion and the application of the hand were of little avail on account of the great degree of fatness. The other method just mentioned (immediate auscultation) being rendered inadmissible by the age and sex of the patient, I happened to recollect a simple and well-known fact in acoustics, and fancied it might be turned to some use on the present occasion. The fact I allude to is the great distinctness with which we hear the scratch of a pin at one end of a piece of wood, on applying our ear to the other. Immediately, on this suggestion, I rolled a quire of paper into a kind of cylinder and applied one end of it to the region of the heart and the other to my ear, and was not a little surprised and pleased to find that I could thereby perceive the action of the heart in a manner much more clear and distinct than I had ever been able to do by the immediate application of the ear.

FIG. 4. RÉNE THÉOPHILE HYACINTHE LAËNNEC (1781–1826).

From this original observation the entire field of mediate auscultation grew. The instrument itself has undergone many changes from the original wooden monaural form devised by Laënnec, but the text, "De l'auscultation médiate," stands today as the foundation of all knowledge of this diagnostic procedure and of diseases of the chest as well. Among innovations in physical diagnosis, mediate auscultation may well be said to have sprung Minerva-like from the brain of its founder.

With its introduction came an entirely new nomenclature and it is indeed a commentary on the quality of Laënnec's work and his knowledge of etymology that most of these expressions are preserved. The instrument was named by him, the stethoscope (from the Greek, to explore the chest). Pectoriloquy was thus described:

> In the case of a woman, affected with a slight bilious fever, and a recent cough having the character of a pulmonary catarrh, on applying the cylinder below the middle of the right clavicle, while she was speaking, her voice seemed to come directly from the chest, and to reach the ear through the central canal of the instrument.

After repeated observations at the bedside confirmed by post-mortem studies he concluded: "I began to suspect that this phenomenon might be occasioned by the tuberculous excavations in the lungs." Bronchophony appeared to Laënnec as a more diffuse quality of the spoken voice. The description of the voice transmission, termed egophony by him, is classical:

> It appears as if a kind of silvery voice, of a sharper and shriller tone than that of a patient, was vibrating on the surface of the lungs, sounding more like the echo of the voice than the voice itself . . . It has, moreover, another character, so constant as to lead me to derive from it the appellation of the phenomenon—I mean a trembling or bleating sound like the voice of a goat, a character which is the more striking because the key or tone of it approaches that of this animal's voice.

Further egophony is likened to "the nasal intonations of the juggler speaking in the character of Punch." Here again the underlying pathology was correlated carefully by Laënnec and the voice change of egophony was determined to exist only in the presence of a pleural effusion. The terms metallic tinkle and *soufflé voilé* are self-expressive, and Laënnec's accuracy in defining their significance was unerring. His classification of râles or rhonchi might be readopted to advantage today. The examples of the lasting quality of Laënnec's contribution to the knowledge of physical signs in pleuropulmonary affections might be multiplied. Strangely, he overlooked the pleuritic friction until it was called to his attention by Dr. Honoré (1824). The "sound of friction of ascent and descent" was even then misinterpreted to depend on interlobular emphysema of the lungs. It remained for J. Joseph Reynaud to correct this error. Laënnec utilized palpation in determining the vibration of the spoken voice, a procedure which Reynaud introduced. Opposing Andral and Piorry, Laënnec underestimated the importance of the study of the movements of the chest.

Only a true disciple of Hippocrates could have dictated the following word picture of the progression of phthisis:

> As soon as the hectic fever is established, wasting of the body becomes manifest, and makes more rapid progress, according as the perspiration, the expectoration and the diarrhea are more abundant. In women and persons of a lymphatic habit, the skin becomes white or bluish-pale, with a very slight shade of lemon-yellow. The emaciation then makes rapid progress toward complete marasmus; and presents to us the picture traced with such frightful truth by Aretaeus. The nose becomes sharp and drawn; the cheeks are prominent and red—and appear redder by contrast with the surrounding paleness; the conjunctiva of the eyes is of a shining white or with a shade of pearl-blue; the cheeks are hollow; the lips are retracted, and seem moulded into a bitter smile; the neck is oblique, and impeded in its movements; the shoulder-blades are projecting and winged; the ribs become prominent, and the intercostal spaces sink in, particularly on the upper and fore parts of the chest. Sometimes even the whole chest seems contracted, as was observed by Bayle; and this may actually be the case, particularly when the disease is very chronic,

owing to the contraction and tendency to cicatrization of large tuberculous excavations. The belly is flat and retracted, the larger joints and those of the fingers, appear enlarged, from the falling away of the neighboring soft parts; and even the nails become incurvated, in consequence of the absorption of the pulpy extremities of the fingers.

Truly Laënnec described disease with the minute delineation of an etcher and his effects were achieved by wonderful word shadings.

Laënnec's grasp of circulatory signs and their significance was not comparable to his facility in the pulmonary diseases. He attributed great importance to the extent over which the heart sounds were heard and peculiarly also the thrust imparted to the stethoscope by the apical impulse. Stating that two sounds arose from the heart's action to each pulse, he continued:

> One of these is clear and rapid, and somewhat resembles the sound produced by the valve of a pair of bellows; this corresponds to the systole of the auricles. The other is more dull and prolonged, coinciding with the beat of the pulse and with the shock or impulse communicated to the walls of the chest by the motion of the heart; it indicates the contraction of the ventricles.

If this description be critically analysed, Laënnec must be accorded priority in the evaluation of the first sound even though his order was reversed. A half century of controversy evolved on this very point. Laënnec described murmurs as bellows sounds, rasping, musical or hissing in quality, and understood their significance. He likewise heard the leathery creak of pericarditis.

Laënnec expressed a hope that his method of examination might find favor in the practice of a few worthy physicians and that it might "prove the means by which a single human being is snatched from untimely death." The careful correlation of clinical materials and necropsy findings, which marked Laënnec's presentation, won immediate recognition for his discovery and the new field of physical diagnosis opened by it. A committee of the French Academy of Sciences composed of Portal, Pelletan and Percy, reported favorably on his work. His clinics, crowded by students from far and near, were addressed in a simple unaffected manner and his teachings thus rapidly spread to remote countries. His bedside notes were dictated in Latin to spare the sensibilities of the patient. This custom served a second purpose in supplying a common medium of expression for the foreign students.

It is too much to expect that Laënnec and his works should have been spared the derision so peculiarly the lot of contributors to the advancement of civilization. America through two of her physician-litterateurs was a subscriber to this heedless form of disrespect. Oliver Wendell Holmes was the first offender with his famous "Stethoscope Song," purporting to be "A Professional Ballad."[4] This cheap though amusing doggerel from Holmes may be pardoned, but one scarcely anticipates such a spirit of levity in S. Weir Mitchell as the following abstract from the "Autobiography of a Quack" would indicate:

> I proceeded, of course, to apply a stethoscope over her ample bosom, though what I heard on this and similar occasions I should find it difficult to state. I remember well my astonishment in one instance where, having unconsciously applied my instrument over a clamorous silver watch in the watch-fob of a sea-captain, I concluded for a moment that he was suffering from a rather remarkable displacement of the heart.

In person Laënnec was slight and wiry. Passionately fond of the field and chase, his happiest days were spent in the country. Humility and eager friendliness were personal characteristics. Mild and gentle, his only public controversy, with Broussais, found him scarcely magnanimous toward his opponent. A glance at the vituperous habit of Broussais will convince the most doubtful of Laënnec's disadvantage. Laënnec was brilliant in his clinical contact and yet most considerate of his subjects. He was successful in private practice and taught at various times in Necker Hospital, the College of France and La Charité. The intimacy of his teaching left its mark on all of his pupils. Escaping early childhood diseases, the first evidence of ill health obtained on his completion of his medical course. Curtailment of his activities tided over this period of strain. A second partial breakdown succeeded the completion of the first edition "De l'auscultation médiate," at which time he retired to Kerlouarnec (Place of Foxes) near Quimper. Here in the quiet of the country and under the salubrious influence of the sea breezes, Laënnec rapidly recuperated from what was termed a slow nervous fever. Only his deep sense of duty took him back to Paris and the killing pace of his work. The final collapse came in 1826, singularly enough after the completion of a rewritten second edition of his treatise. By this time the signs of his condition were unmistakable. Retiring again to his beloved Brittany, Laënnec died a victim of the disease to the knowledge of which he had been the greatest contributor. No other sufferer from tuberculosis has borne more effective witness to its reputed mental stimulation.

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[4] See addendum.

Fig. 5. Pierre Charles Alexandre Louis (1787–1872).

The renaissance of physical diagnosis ushered in by Corvisart and Laënnec found able advocates in Louis, Piorry, Chomel, Andral and Reynaud. Indeed no medical center has seen in any period such an array of skilled clinicians as did Paris in the early years of the nineteenth century. Louis attracted the greatest homage of medical patronage, but the services of Chomel and Andral grow in importance through the lengthening years. Essentially bedside practitioners and sound thinkers, these clinicians held medicine and diagnosis to an even keel in France when the kaleidoscopic changes they were witnessing might easily have shifted teaching to an unstable, insecure basis.

Pierre Charles Alexandre Louis (1787–1872) was the logical successor to Laënnec. Lacking the fine graces of Chomel and the eloquence of Andral, he became by serious application and kindly attention to their needs, the idol of medical students who held his very word as law. An inscription on his photograph sent to an old pupil, Henry I. Bowditch, expressed his philosophy of life:

> There is something rarer than the spirit of discernment; it is the need of truth; that state of the soul which does not allow us to stop in any scientific labors at what is only probable, but compels us to continue our researches until we have arrived at evidence.

Such a faith only could have sustained Louis in his complete renunciation of assured personal advantage for the pursuit of truth. A native of Ai, Louis prepared for the profession of law but later changed to the study of medicine in Rheims and Paris, where he graduated in his twenty-seventh year. The succeeding seven years were spent in the practice of medicine in Russia, whither he had gone at the instance of M. le Comte de Saint-Priest, a family friend with influential connections in St. Petersburg. Four years of his residence in Russia were spent in Odessa. A frightful epidemic of diphtheria in the latter city determined the necessity for further study at the sacrifice of his practice. Returning to Paris, first independently at the Children's Hospital and then under the patronage of his classmate Chomel at La Charité, Louis pursued his painstaking studies with no thought of financial return. "Fully persuaded that to observe well, we must not observe hastily" he spent three to five hours daily at La Charité and two hours on each post-mortem examination of patients previously studied in the wards. In answer to Broussais' charge of dishonesty in reporting results, Louis wrote:

> Let the reader judge, if one who for nearly seven years renounced the practice of medicine to devote himself to the observation of facts, let him say whether this individual was guided by the desire to invent? Whether these seven years of study ought not forever to have sheltered him from such a suspicion? The reader may regret that he has done so little in so long a period, but assuredly he will not impeach his integrity, he will not imagine that he is actuated by other than conscientious motives?

The application of the numerical method to the practice of medicine was one of Louis' great contributions. His writings were largely compilations of accurate and minute observations from which symptoms were evaluated only by the mathematical frequency of their appearance. To this day his texts on pulmonary and gastrointestinal disorders remain classics, lost unfortunately to the casual eye in the glamor of new and recent editions. Louis was the first clinician to routinely count the pulse. However, his greatest service was in spreading the gospel of exact clinical methods and through this medium Louis comes down to us as one of the greatest factors in the advance of physical diagnosis.

> Year by year fresh bands of students came to imbibe from his lips the instruction which their predecessors had abandoned with reluctance, till his academic progeny knew no distinction of race or even colour, but coalesced into a noble band of enthusiasts in the cause of medicine, of science and of humanity.

Of Louis, the man, many tributes have been left by admiring hands. A contained, self-effacing individual in company, his zeal for medicine warmed his contact with students. Ill at ease in the lecture room, he was a man transported at the bedside. Never was public speech ready for him. His breach with Broussais was inevitable in the very nature of the principals. Never could the truth-seeking Louis have fully subscribed to a loose theorism which attributed fever and disease in general to gastrointestinal irritation. In person, Louis was tall and spare, of kindly but serious mien. At eighty years of age he retained the mental alertness and fire of his early days.

A word in passing should be accorded one of Louis' confrères, Pierre-Adolphe Piorry (1794–1879), whose chief contribution to physical diagnosis was the pleximeter. A native of Poitiers, he began the study of medicine in his sixteenth year. Wars have always had their allurement for medical students, and so Piorry interrupted his work to serve as surgeon's helper in the army in Spain. Returning to Paris, he completed his medical course in 1816. Broussais and later Magendie were his masters. His treatise, "De la percussion médiate," won the Monthyon Prize in 1828. Academic honors awaited him in the Faculté de Paris, La Charité and Hôtel-Dieu, where he succeeded Trousseau. An opportunist by nature, his sophistry found expression as follows:

> Emphasis and arrogance should be avoided without becoming commonplace. Questions must be answered, however useless they may be, for in the eyes of the world they have a great value, and the physician cannot neglect these little nothings when related to him by the patient. The physician should behave with firmness but with courtesy, unite cold-bloodness with a certain amount of feeling, and in important matters stand firmly for what he regards as for the good of the patient. Prejudices which he cannot overcome he must know how to yield

to (though always giving them his censure), unless they are accompanied with danger. These prejudices the physician should not neglect if he desires to make his fortune in this world, where *savoir faire* often commands more success than reason and sound understanding.

Piorry introduced the ivory plate and hammer into percussion and was extremely adept in their use as well as in other methods of physical examination.

It was interesting, and, indeed, amusing, to see him in his wards, perched on a high stool, which was taken from bed to bed, and bending over the patient, now knocking the ivory gently with his hammer, now scarcely grazing it with his fingers, with the conviction and *amore* of some great artist, eliciting marvellous notes from a musical instrument.

Fig. 6. Robert Graves (1796–1853).

His peculiar foible, a system of nomenclature completely revised from the Greek, afforded him ample opportunity for the exercise of his keen intellect and biting sarcasm in its defense both in the medical press and in the forum of the Paris Academy of Medicine. Few relics of this elaborate fabric, such as dermographia, are left to posterity. For a season Piorry was the most popular teacher in Paris and his consummate knowledge of diagnosis left its mark on medicine.

The influence of the rebirth of clinical medicine through the revival of old diagnostic procedures and the institution of new methods of precision spread rapidly from Paris to all parts of the civilized world. Its brilliant light was best reflected in the Irish school of Dublin. Never in the history of that distressful nation and rarely in the history of medicine has a more distinguished and able group of clinicians lived and practiced in the same community at the same period than Graves, Stokes, Cheyne and Corrigan. Graves and Stokes were in attendance to Meath Hospital. Cheyne was physician to the Hardwicke Fever Hospital, and Corrigan, to the Jervis Street Infirmary. To their wards flocked students from all nations. Dublin for a short span of years ranked with Paris and Edinburgh in clinical teaching. Graves was the dean of this group.

Robert James Graves (1796–1853), born in Dublin, spent his early years and received his medical education in his native city. Broadening his interests and contacts after graduation by a trip through central and southern Europe, Graves has left an interesting journal of his experiences. His linguistic ability proved a boomerang in Austria, when, failing to produce a passport, his fluency in the German language led to his arrest and confinement in a dungeon as a spy. Graves sketched side by side with the great Turner for several months before learning his identity. A glimpse of his stout courage and quick decision may be gathered from the following episode. Having set sail in a small vessel on the Mediterranean, a heavy storm overtook them and the ship seemed in imminent danger of capsizing. The ship's crew prepared to take off in the life boat leaving Graves and his fellow passenger to the mercy of the storm. Whereupon Graves seized an axe and crushed the life boat declaring that they would all die together. Quailing before the resolute Irishman, the crew took to the pumps which had been repaired from his own boots. They safely weathered the storm.

Graves inherited the natural wit of his race. Speaking of vermin which infested the beds in Rome, he remarked, "A certain friend of mine was so tormented by their bites that when visiting the capitol he flung, in a fit of rage, thirty of the ringleaders headlong down the Tarpeian rock." In person Graves was tall and reserved. His sharp tongue belied a warm heart. Graves was an excellent lecturer and diagnostician. He was one of the founders of the Park Street School of Medicine. At the bedside Graves appeared to best advantage. Protecting the patient at every turn, he nevertheless made bedside teaching more than a theory of instruction. In Meath Hospital, students were given real responsibilities in the examination and care of patients, thus bridging "the impassable gulf which in that aristocratic era lay between the student and the teacher." Unquestionably this departure in clinical instruction constituted Graves' greatest contribution to medicine. His clinical lectures were the medical law to as great a contemporary as Trousseau. Graves emphasized pulse taking, first observed the pin-point pupil and described exophthalmic goitre, a condition bearing his name. "The world never spoiled him, so that he preserved most of the youthful, and all the kindly and better qualities of his mind up to the hour of his death."

On the appearance of Laënnec's epochal treatise on mediate auscultation, an Irish boy studying medicine in Edinburgh prepared an explanatory monograph on the innovation in English. This supplementary text had a wide circulation and did much to place the stethoscope on a firm basis among English-speaking physicians. Its author, William Stokes (1804–78), had been to the manner born. His father was a distinguished physician in Dublin and held the Regius Professorship of Physic. The elder Stokes personally undertook the supervision of his son's early education. Their walks together were most helpful by reason of the father's botanical and geological interests. Religious differences led the elder Stokes to withhold his support from Trinity College, and an ex-fellow of Trinity, John Walker, was entrusted with young Stokes' further training. His medical education was completed in Edinburgh under the preceptorship of Prof. William Alison, who wielded a great influence on the young Irishman. Returning to Dublin, Stokes was early appointed to the staff of the Meath Hospital with Graves, and the friendship between the two was unswerving until the death of the latter.

FIG. 7. WILLIAM STOKES (1804–1878).

Stokes' contribution to physical diagnosis may be summed up in his words: "If you would advance a knowledge, be content to take up the thread where the last investigator laid it down, and set yourself to carry on his work." Apparently Laënnec was his guiding star and he immediately set himself to the task of improving the status of mediate auscultation. In a lecture at the Meath Hospital (1828), Stokes strongly defended the stethoscope, saying:

> The stethoscope is an instrument, not as some represent it, the bagatelle of a day, the

Bright stands preeminent as a contributor to the clinical knowledge of nephritis. Without the aid of the microscope or the refinements of chemistry he carried the studies of this condition to a point beyond which there has been little progress in the ninety years since his memorable report. Bright thus outlined the test on which much of his clinical work was based:

> One of the most ready means of detecting albumen is the application of heat, by taking a small quantity of urine in a spoon and holding it over the flame of a candle. If albumen be present, you perceive before the fluid reaches the boiling point that it becomes opaque, sometimes presenting a milky appearance at the edge of the spoon, which extends inward till it meets in the centre and then breaks into a white curd.

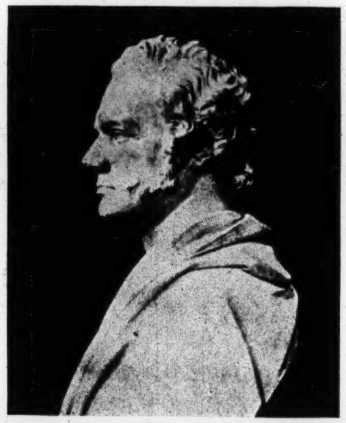

FIG. 9. THOMAS ADDISON (1793–1860).

Bright recognized the difference between the cloud of phosphates and albumen. Of course albumen has been previously determined in the urine, and Morgagni had correlated its presence with convulsions and the morbid anatomy of the kidneys. But in the Gulstonian Lecture (1833) Bright sounded the advance as follows:

> I enlarge a little upon this topic—the indication of disease derived from an albuminous condition of the urine—for I am fully convinced that, however great may be the difficulties which present themselves in explaining the dependence of different symptoms and tracing the links by which they are united, it is a fact that much important disease arises in connection with those derangements of the kidneys which lead to the admixture of albumen with the urine, a connection which had not until very lately been in the least suspected, and that while it has been the habit of practitioners to read in every sallow or leucophlegmatic countenance an indication of some derangement of the liver, the spleen, or perhaps the uterus, the real cause of the symptoms often has been overlooked: and even the anatomist has overlooked the most confirmed organic changes.

Bright clearly outlined the water-retentive and the non-edematous clinical types of nephritis and believed uremic convulsions to result from the failure of the kidneys to eliminate waste products.

Richard Bright was an upright Christian gentleman. Of even temper and cheerful disposition, he nevertheless was an independent thinker and could on occasions stoutly defend his conclusions. His amiability and deep sense of honor coupled with his skill made him the best-known consultant of his day in England. His careful examinations and profound learning warranted this confidence. Interested in nature study and the collection of engravings, Richard Bright gradually withdrew from practice and died in 1858 of a cardiac lesion.

Less favored in those graces which make for the successful practice of medicine but more brilliant as a lecturer and diagnostician than Bright was his confrère, Thomas Addison (1793–1860). The physiognomist will read into the firm lines of the carved face of Addison the courage which prompted him to defend his conviction of the inflammatory nature of the tubercle against the master, Laënnec. Addison was a man of strange contradictions. Holding himself aloof from his students, he yearned for companionship. Gruff in his contact, he nevertheless gave a former student a substantial purse to enable him to accept a fellowship in the College. Held in awe by his associates, Addison stilled all bearers of detracting statements concerning them by the simple words: "He is my colleague." Contemporary caricatures are sometimes of assistance in drawing mental pictures of remote subjects, exaggerated if not accurate. Thus was Addison depicted.

> He is a fine, dashing, big, burly, bristling man, proud and pompous as a parish beadle in his robe of office. Dark and of sallow complexion, an intelligent countenance and noble forehead, he is what the ladies would pronounce a fine man. He has mentally and physically a tall idea of himself. Every sentence is polished, is powerful; he prefers the grandiloquent. Slow and studied are his opening sentences, studied the regularity of his intonations. The advantages of his tall and graceful person are artfully employed to add to the favorable impression; his attitudes, tones, and manner are studied and systematic.

The word-artist was more charitable than the rule and failed only to note that the hauteur of the teacher was in reality the defense of a most sensitive nature.

Thomas Addison came of tradespeople in Long Benton. His education was obtained in Newcastle and Edinburgh. Seeking his fortune in London, Addison became house surgeon to Lock Hospital, studying skin diseases under Bateman at the Public Dispensary. Shortly after this Addison gave the first clinical lectures on the diseases of the skin ever delivered in London. His appointment to Guy's is significant in that he won the assistant physicianship over Seymour, the candidate of King William IV. Seymour later sent his son to Guy's to study under his successful rival. Addison was most meticulous in his physical examinations. His hearing being impaired in one ear, he passed from side to side to complete and verify his findings. He was dissatisfied to leave a symptom unexplained. It is related that he once came back to the hospital at midnight because on retiring he remembered that he had not examined a certain patient for hernia. The skill of Addison in physical diagnosis was evidenced in his monograph, "On the Constitutional and Local Effects of Disease of the Supra-renal Capsules," a work which opened the labyrinth of the diseases of the ductless glands. To this syndrome, Trousseau first applied Addison's name. Important as were this and other contributions of an original nature, Addison's greatest service to medicine lay in the field of instruction. He was in truth the prophet of exact physical diagnosis in England. His word was the court of last appeal to his students. Feared rather than revered, Addison was the most forceful of a notable group of medical men at Guy's in his time. A ward in that hospital bears his name and a tablet in the chapel records his services.

Modern clinical medicine saw the light of day in Central Europe through the offices of an unusual character, Johann Lucas Schönlein (1793–1864). A native of Bamberg, his education was obtained in Landshut, Würzburg, Göttingen and Jena. The staunch Brunonian, Röschlaub, sowed the seeds of that unstable system into Schönlein in 1811. From the sthenic and asthenic grouping of disease, the career of Schönlein as a teacher in Würzburg, Zürich and Berlin, may be traced by a series of new and highly artificial classifications. Overlooking this idiosyncracy, Schönlein's real worth and services become apparent. To him full credit is due for the introduction of bedside

FIG. 10. JOHANN LUCAS SCHÖNLEIN (1793–1864).

brain-born fancy of some speculative enthusiast, the use of which like the universal medicine of animal magnetism, will be soon forgotten, or remembered only to be ridiculed. It is one of those rich and splendid gifts which Science now and then bestows upon her votaries, which while they extend our views and open to us wide and fruitful fields of inquiry, confer in the meantime the richest benefits and blessings on mankind. This instrument was first introduced by one whose works will ever remain as an example of patient investigation, philosophical research, and brilliant discovery, and its use is now supported by the liberal and enlightened and scientific portion of the medical world.

Stokes' published work on diseases of the chest did more to advance the knowledge of the physical findings in these conditions than any text after Laënnec. Stokes was the first to suggest the use of the finger as a pleximeter in percussion. Peculiarly he suggested that the finger, so used, be placed with the dorsum toward the chest. Another method of percussion was advanced, namely, "to place the back of the nail of a finger on the pulp of the thumb, and to make a fillip on the part." Stokes agreed with Reynaud in attributing the *frottement* to pleural inflammation. Contrary to the present conception, Stokes believed the breath sounds to be more intense at the left than at the right apex. He termed the single inspiratory tick heard over a cavity the "death watch of the consumptive." To the retraction dependent on scar formation in a subjacent apical lesion, he attributed the bruit de soufflet heard over the subclavian artery. Stokes was probably the first to determine the pleuropericardial friction. He described inversion of the diaphragm and bulging of the interspaces in empyema and attributed these changes to paralysis of the involved muscles. Stokes was the first clinician to note the inconstancy of fluid movement in the thorax. Pain in the shoulder was remarked in pneumonia. The optimism of tuberculous patients was recounted in these graphic words, "The destruction of the lung causes a relief to the patient, and too often may we hear the voice of hope and confidence, reverberating in the cavity which seals the patient's doom." A type of rhythmical irregularity of respiration was described by him and is still termed Cheyne-Stokes breathing. Priority for another condition bearing his name, heart-block (Stokes-Adams syndrome), rightfully belongs to Morgagni.

William Stokes was a keen observer and his inherent sagacity tempered all of his teachings. He tenaciously held to the essential nature of fever. He was a close student of human nature. An abiding sense of humor was his saving grace during the awful days of the cholera epidemic, when he himself suffered from the disease. The Stokes were a large family and their home, the congenial meeting-place of a considerable group of intellectuals, lovers of natural history and art. One is amused to read that Carlyle spent an uncomfortable evening there and that Stokes judged him a bore. The highest honors in the medical world were bestowed upon Stokes, but of these he prized most highly the Prussian order *pour le mérite* and the degree of doctor of medicine *honoris causa* from the University of Dublin. Stokes retired to his country place two years before his death. Here, surrounded by his family, he spent his last days in close communion with nature.

The two remaining members of the famous Dublin school were Sir Dominic Corrigan (1802–80) and John Cheyne (1777–1836). Corrigan lives in medical history largely through his excellent monograph on "The Permanent Patency of the Mouth of the Aorta or Inadequacy of the Aortic Valves." This remarkably comprehensive paper was written on the materials supplied by six beds in the Jervis Street Hospital and yet the intervening years have added little to the fundamental knowledge of aortic regurgitation. His name is applied to the ill-sustained pulse of this condition which he first noted. Corrigan likewise first described the expansile pulsation of aneurysms. John Cheyne really antedated the other members of the Dublin school. A native of Leith, Scotland and the son of a physician, Cheyne assisted his father from his thirteenth year. Entering Edinburgh at sixteen, he completed his medical course at eighteen years of age. Attached as surgeon to the British military forces in Ireland, he continued his residence in Dublin after leaving the army. Affiliation with the Meath Hospital and the College of Physicians assured his rapid advance in practice. Cheyne is particularly known by reason of an observation on a type of breathing, now termed Cheyne-Stokes respiration: "For several days breathing was irregular. It would entirely cease for a quarter of a minute; then it would become perceptible, though very low; then by degrees it became heaving and quick; and then it would gradually cease again." Ill health forced Cheyne's retirement from active practice when he had reached the peak of his prominence (1821). He devoted his declining years to religious contemplation and a desultory practice in rural England.

The impetus lent to clinical medicine by the French school was felt in England as well as in Ireland in the early years of the last century. Prominent in this forward movement was Richard Bright (1789–1858), a pupil of Sir Astley Cooper and James Currie. The scion of a wealthy family of Bristol, Bright received his early education in this city and at Edinburgh. His training at Edinburgh was interrupted (1808) to participate in the scientific expedition of Sir Alexander Mackenzie to Iceland. His chief commended his energy in collecting materials, his intrepidity and his unfailing cheer. The two years following Bright's return from Iceland were spent as clinical resident in Guy's Hospital. Here Cooper encouraged his interest in post-mortem examinations and Bright made his first drawings of the granular kidney, laying the foundation as a medical student for one of the finest contributions to the advance of clinical medicine. In 1813 Bright graduated from Edinburgh, and after a short sojourn in Cambridge visited the hospitals and clinics of continental Europe for another year. Returning to England he became a licentiate of the Royal College of Physicians in December, 1816.

Bright won immediate recognition by an appointment to the London Fever Hospital. Subsequent to a serious illness contracted here, he was appointed to the staff of Guy's Hospital, a connection which he held in various capacities until his death. With Addison (after 1820), Bright brought Guy's to the highest position in its history. In 1827 Bright published an elaborate text, "Reports of Medical Cases," in three volumes. Its cost precluded subsequent editions. His observations were made with the precision of a photographer, usually avoiding all pretext of interpretation. For instance, he carefully described a case showing bronzing of the skin in which the suprarenal capsules were destroyed. Bright drew no conclusions and the honor for the first description of this condition is accorded his illustrious associate, Addison.

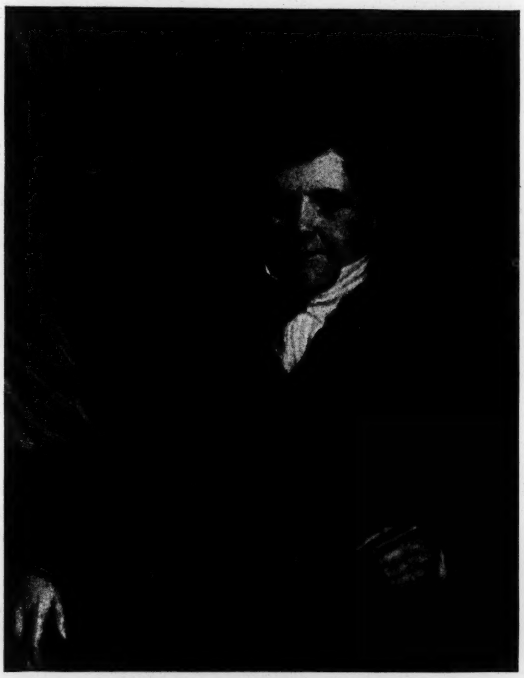

FIG. 8. RICHARD BRIGHT (1789–1858).

Bright stands preeminent as a contributor to the clinical knowledge of nephritis. Without the aid of the microscope or the refinements of chemistry he carried the studies of this condition to a point beyond which there has been little progress in the ninety years since his memorable report. Bright thus outlined the test on which much of his clinical work was based:

> One of the most ready means of detecting albumen is the application of heat, by taking a small quantity of urine in a spoon and holding it over the flame of a candle. If albumen be present, you perceive before the fluid reaches the boiling point that it becomes opaque, sometimes presenting a milky appearance at the edge of the spoon, which extends inward till it meets in the centre and then breaks into a white curd.

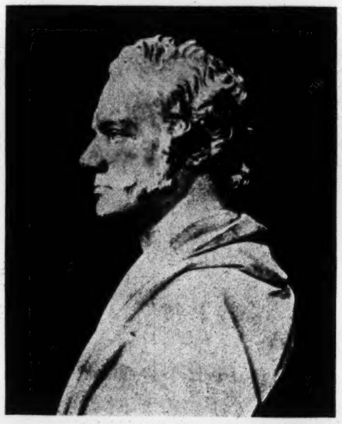

Fig. 9. Thomas Addison (1793–1860).

Bright recognized the difference between the cloud of phosphates and albumen. Of course albumen has been previously determined in the urine, and Morgagni had correlated its presence with convulsions and the morbid anatomy of the kidneys. But in the Gulstonian Lecture (1833) Bright sounded the advance as follows:

> I enlarge a little upon this topic—the indication of disease derived from an albuminous condition of the urine—for I am fully convinced that, however great may be the difficulties which present themselves in explaining the dependence of different symptoms and tracing the links by which they are united, it is a fact that much important disease arises in connection with those derangements of the kidneys which lead to the admixture of albumen with the urine, a connection which had not until very lately been in the least suspected, and that while it has been the habit of practitioners to read in every sallow or leucophlegmatic countenance an indication of some derangement of the liver, the spleen, or perhaps the uterus, the real cause of the symptoms often has been overlooked: and even the anatomist has overlooked the most confirmed organic changes.

Bright clearly outlined the water-retentive and the non-edematous clinical types of nephritis and believed uremic convulsions to result from the failure of the kidneys to eliminate waste products.

Richard Bright was an upright Christian gentleman. Of even temper and cheerful disposition, he nevertheless was an independent thinker and could on occasions stoutly defend his conclusions. His amiability and deep sense of honor coupled with his skill made him the best-known consultant of his day in England. His careful examinations and profound learning warranted this confidence. Interested in nature study and the collection of engravings, Richard Bright gradually withdrew from practice and died in 1858 of a cardiac lesion.

Less favored in those graces which make for the successful practice of medicine but more brilliant as a lecturer and diagnostician than Bright was his confrère, Thomas Addison (1793–1860). The physiognomist will read into the firm lines of the carved face of Addison the courage which prompted him to defend his conviction of the inflammatory nature of the tubercle against the master, Laënnec. Addison was a man of strange contradictions. Holding himself aloof from his students, he yearned for companionship. Gruff in his contact, he nevertheless gave a former student a substantial purse to enable him to accept a fellowship in the College. Held in awe by his associates, Addison stilled all bearers of detracting statements concerning them by the simple words: "He is my colleague." Contemporary caricatures are sometimes of assistance in drawing mental pictures of remote subjects, exaggerated if not accurate. Thus was Addison depicted.

> He is a fine, dashing, big, burly, bristling man, proud and pompous as a parish beadle in his robe of office. Dark and of sallow complexion, an intelligent countenance and noble forehead, he is what the ladies would pronounce a fine man. He has mentally and physically a tall idea of himself. Every sentence is polished, is powerful; he prefers the grandiloquent. Slow and studied are his opening sentences, studied the regularity of his intonations. The advantages of his tall and graceful person are artfully employed to add to the favorable impression; his attitudes, tones, and manner are studied and systematic.

The word-artist was more charitable than the rule and failed only to note that the hauteur of the teacher was in reality the defense of a most sensitive nature.

Thomas Addison came of tradespeople in Long Benton. His education was obtained in Newcastle and Edinburgh. Seeking his fortune in London, Addison became house surgeon to Lock Hospital, studying skin diseases under Bateman at the Public Dispensary. Shortly after this Addison gave the first clinical lectures on the diseases of the skin ever delivered in London. His appointment to Guy's is significant in that he won the assistant physicianship over Seymour, the candidate of King William IV. Seymour later sent his son to Guy's to study under his successful rival. Addison was most meticulous in his physical examinations. His hearing being impaired in one ear, he passed from side to side to complete and verify his findings. He was dissatisfied to leave a symptom unexplained. It is related that he once came back to the hospital at midnight because on retiring he remembered that he had not examined a certain patient for hernia. The skill of Addison in physical diagnosis was evidenced in his monograph, "On the Constitutional and Local Effects of Disease of the Supra-renal Capsules," a work which opened the labyrinth of the diseases of the ductless glands. To this syndrome, Trousseau first applied Addison's name. Important as were this and other contributions of an original nature, Addison's greatest service to medicine lay in the field of instruction. He was in truth the prophet of exact physical diagnosis in England. His word was the court of last appeal to his students. Feared rather than revered, Addison was the most forceful of a notable group of medical men at Guy's in his time. A ward in that hospital bears his name and a tablet in the chapel records his services.

Modern clinical medicine saw the light of day in Central Europe through the offices of an unusual character, Johann Lucas Schönlein (1793–1864). A native of Bamberg, his education was obtained in Landshut, Würzburg, Göttingen and Jena. The staunch Brunonian, Röschlaub, sowed the seeds of that unstable system into Schönlein in 1811. From the sthenic and asthenic grouping of disease, the career of Schönlein as a teacher in Würzburg, Zürich and Berlin, may be traced by a series of new and highly artificial classifications. Overlooking this idiosyncracy, Schönlein's real worth and services become apparent. To him full credit is due for the introduction of bedside

Fig. 10. Johann Lucas Schönlein (1793–1864).

teaching into Germany. Realizing their value, Schönlein availed himself of auscultation and percussion. He was furthermore the first clinician to use the microscope routinely in diagnosis. The causative agent of tinea favosa was first described by him and now bears his name (achorion Schönleinii). He introduced chemical and blood examinations into clinical practice. Peliosis rheumatica and hemophilia were first so termed by Schönlein. He differentiated varicella and variola. Among the pupils of this peripatetic teacher were Simon, Remak, Virchow, Traube, Canstatt and Fuchs. Like most great teachers his first interest was their instruction. Schönlein was the first professor at Charité in Berlin to lecture in German.

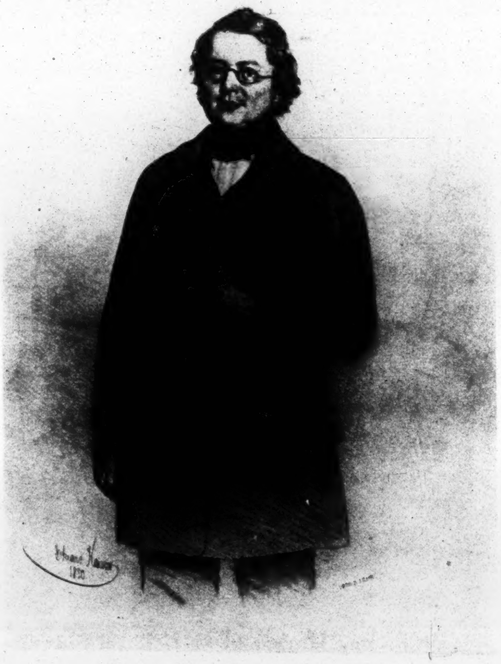

FIG. 11. JOSEF SKODA (1805–1881).

Of his personality little has been recorded. He was somewhat eccentric. In his declining years, Schönlein affected the air of a recluse, making only such calls as he desired. Virchow in an eulogy of his old teacher related an amusing episode of the latter's boorishness. An elderly physician having consulted Schönlein was disturbed by his manifest rudeness and thinking to demand respect, pointed to his gray hair. Whereupon Schönlein retorted, "Auch die Esel sind grau!" Schönlein died from pressure of a growth (goiter?) on the trachea. It can truly be said that wherever he went, that center rose in prominence and usefulness. Griesinger wrote of him, "Schönlein's irdische Tage beendigte ein schneller und leichter Tod.—Sein name bleibt in der deutschen Medizin unvergänglich und in hohen Ehren.—Den mann wird Keiner vergessen, der ihm nahe kam."

Great as were the contributions of Schönlein to the advance of clinical methods in Central Europe, even greater progress was made after his retirement from active practice through the efforts of Friedrich Theodor von Frerichs (1819–85) and Ludwig Traube (1818–76) in Berlin and Joseph Skoda (1805–81) in Vienna. Of this group of contemporary clinicians, Skoda was supreme in his contributions to physical diagnosis. His clinics were very popular. Skoda was absolutely oblivious of both patients and students in his absorption at the bedside. Early in his career he was transfered from the general wards of the Allgemeines Krankenhaus to the insane department because of this lack of consideration for the patients. He thus became the father of the realistic school, which considered few diagnoses positive unless confirmed by post mortems.

Skoda was through and through a medical savant and investigator. For him man was an object of investigation. He could be candid even to the point of recklessness. Accordingly the patient had the consolation (?) of standing in the presence of a man who gazed, as with the eye of clairvoyance, into the very vitals of the sufferer, and explored the seat of disease.

He effected a division of the medical services in the Allgemeines Krankenhaus after the French plan. Following the initiative of Schönlein, Skoda lectured in German. However, his prescriptions were dictated from the foot of the bed to the clinical clerks in

Latin to properly impress the patients. His chief service to physical diagnosis was his partially successful effort to replace the inexact terminology of the French school by a system based on quasi-physical laws. In place of the gastric and high notes of the imaginative Parisians came a grouping of tones from full to empty, clear to dull, tympanitic to non-tympanitic, high to deep. Skoda failed in his attempt to completely apply an objective system to percussion, but his efforts controlled by experiments on the cadaver were a movement in the right direction. The hyperresonant note above pleural effusions and about consolidations bears his name by reason of the priority of his description. A therapeutic nihilist, when pressed by his students for treatment in a given case, he would say: "Go to my friend, Oppolzer," a famous polytherapist of the day in Vienna.

Skoda was a native of Pilsen, Bohemia, which country likewise gave birth to his most illustrious contemporary in Vienna, Carl Rokitansky (1804–78). The income of his locksmith father did not afford the son a liberal education, but by sheer force of will and real privation young Skoda won an academic education. Poverty extended his medical training at Vienna six long years. The cholera epidemic of 1831 found him in the government service in Bohemia. The leading clinician of the new Vienna school, Skoda's greatest activities were centered in the wards of the Allgemeines Krankenhaus. He lacked all trace of imagination. His style was very severe and clumsy. Small of stature and serious of demeanor, he won the respect of the medical world by his grasp of physical diagnosis rather than through his personal charm. Skoda rejected overtures to honor him by knighthood. A rather pompous bachelor, he is said to have retained the services of a tailor, the friend of his meager student days, and rather than offend him wore throughout his life the obsolete "barn-door" breeches. By way of contrast Skoda sued a minister for his professional fees. In 1842 he made a trip to England, but his practical eye was absorbed with the wonders of the steamships on the Thames, and no medical impressions were recorded. He retired from teaching in his seventieth year, acclaimed by the entire student-body of Vienna in a magnificent torch-light procession. His characteristic remark at this time was: "Now the microscope and chemistry may take their turn."

The leaven of science which spread from Paris made itself felt in America. The spell of Laënnec, Louis and the other brilliant lights of the French school was cast over a large group of young medical students who sought their finishing courses abroad after the custom of the last century. Their instruction in physical diagnosis breathed new life into the clinical medicine of many centers of this country. A register of these students of the early nineteenth century in Paris includes such names as James Jackson, Jr., H. I. Bowditch, Oliver Wendell Holmes, George C. Shattuck, J. C. Warren, Valentine Mott, George W. Norris, W. W. Gerhard, Casper W. Pennock, Alfred Stillé, Thomas D. Mütter, W. S. W. Ruschenberger, William Pepper and J. L. Cabell. It would be difficult to measure the influence of this notable group on American medicine.

J. Jackson Jr.

FIG. 12. JAMES JACKSON, JR. (1810–1834).

In the scope of the present dissertation two of these men deserve especial consideration. The first of these, James Jackson, Jr. (1810–34) of Boston, Massachusetts, was a man of unusual promise. His father, James Jackson, Sr., was the most prominent physician of his day in Boston. An amiable, pleasure-loving boy, his college career was almost wrecked through ill-chosen companionships. Recovering his balance early, young Jackson won high academic honors at Harvard. He valued the esteem of his fellows above scholastic distinction. Jackson began his medical training under the preceptorship of his father who feared that his son's health would not withstand the strain of his close application. Going to Paris before the completion of his medical course, Jackson was at once attracted by the teachings of Louis. The latter took a fatherly interest in the young American and tried to persuade the elder Jackson to dedicate four years of his son's life to the study of the laws of medicine. Jackson's fellow student in Paris, W. W. Gerhard, wrote: "Pennock and myself are very happy to have become intimate with Jackson; he has superior talents and his excellent education, conducted by his father, unquestionably the first physician in America, has cultivated his mind and developed an ardent attachment to medicine." Jackson was the favorite American pupil of Louis. He was a member of the Société Médicale d'Observation de Paris, which Louis had established for the study of disease. Before this body (1833) Jackson reported the early appearance of the prolongation of the expiratory sound as a sign of pulmonary tuberculosis. Returning to America he died in 1834 before receiving his medical degree. His death was lamented universally in medical circles. The loss to the advancement of physical diagnosis in America by the death of this brilliant student is difficult to estimate.

Of the American students in Paris under the famous French school, William Wood Gerhard (1809–72) unquestionably best exemplified in his subsequent career the lofty ideals of his masters. Gerhard was a Philadelphian by birth and received his education in the University of Pennsylvania. The mathematical accuracy rather than the brilliancy of Louis attracted Gerhard to study under him in Paris. Of his industry and application a letter from Paris gave ample evidence:

> The morning from seven to ten is occupied with the visit and clinic at the hospital; there are several distinct clinics now in actual progress; each of them has its advantages. I shall vary my attendance at the different hospitals and select those lecturers who are of real merit. At this moment we are following Piorry at Salpétrière, a very distant hospital, two or three miles from our lodgings; his patients are all old women, and not interesting. My object in following his course is to obtain some interesting information on the best mode of investigating the diseases of the chest. M. Piorry has devoted special attention to this subject. From Salpétrière we hurry to La Pitié; we hear a surgical lecture, reach home to breakfast, and then to the school of medicine. The lectures at the school, with a private course of anatomy during the hour of intermission, fill up the remainder of the day until four. Fortunately a private clinic at La Charité introduces me to a set of very interesting cases, especially on pectoral cases. Dr. Dagneau has a class who pay him ten francs a month and enjoy the privilege of examining the patients much more conveniently than is practicable during the morning visit in the midst of a crowd of students. We dine at five-thirty and then lectures again until 8 o'clock. Imagine the facilities, the delightful advantage of acquiring positive information, and what is at least as important, of learning the mode of obtaining these positive results. We see and hear the men who are so well known to us in America, learn to form a correct estimate of their relative worth—in short, one of the most striking advantages of a medical visit to Europe is to acquire the sort of liberal professional feeling which is rarely secured by the continued intercourse with the same men, and the unpleasant medical politics which divide the profession in America.

A gratuity obtained the post-mortem specimens from Louis' and Andral's internes and by a special arrangement, Louis himself took Gerhard, Pennock and Jackson as his private pupils. Gerhard and Pennock reported on the cholera epidemic in Paris.

On his return to America, Gerhard rapidly attained a position of prominence in his native city. He served on the medical staffs of Pennsylvania Hospital and Blockley and on the faculty of the University of Pennsylvania. Gerhard is best known for his differentiation between typhoid fever and typhus fever (1836). Applying the methods of Louis, he showed that the slow pulse and intestinal symptoms which characterize typhoid fever, are absent in typhus fever. Gerhard further discriminated between the eruption of typhus fever and the rose spots of typhoid fever. Alfred Stillé was his house physician at Blockley during the epidemic of 1836. Among other important contributions was his very early description of tuberculous meningitis. However, his greatest service to American medicine was his introduction of the exact methods of diagnosis of the French school. Skilled in the diagnosis of diseases of the chest, the teachings of Gerhard were the most authoritative in America before Flint. He was easily the most able clinical teacher of his period in this country. Mitchell thus characterized him: "A man quick of speech and as quick to regret, an unbalanced nature, but a keen and subtile observer." His deep interest and profound erudition carried the force of conviction, and under his kindly yet intense interest physical diagnosis became a real factor in the medical practice of his community and in turn of the country at large.

The momentum which physical diagnosis had gained in America on the accession of the disciples of Louis and the French school to positions of influence in their native country, grew apace, but to trace its forward movement is irrelevant in this connection except for a consideration of the preeminent services of Austin Flint, Sr. (1812–86), a distinctive product of American training. Flint was a native of Petersham, Massachusetts, and came from a long line of physicians. He was educated at Amherst and Harvard. His medical education was auspiciously directed by James Jackson, Sr.; John C. Warren and Jacob Bigelow were among his teachers. Flint practiced for varying periods in Northampton, Boston, Buffalo, Chicago, Louisville, New Orleans and New York. Few successful practitioners have moved so frequently. Yet Flint made his presence felt by his true worth wherever he practiced. Charles Caldwell cited the only exception to this rule, stating that Flint was removed from the faculty of Louisville Medical Institute "not on account of incapacity, but on account of a want of sufficient exertion and self-training." The last twenty-five years of Flint's life were spent in New York where on the faculty of the Bellevue Hospital Medical College he rejuvenated the teachings of Laënnec and Louis.

FIG. 13. WILLIAM WOOD GERHARD (1809–1872).

In versatility and influence on medical thought of a given period, Austin Flint stands second only to Rush among American physicians. With Louis, Stokes and Skoda, Flint's greatest service to medicine was by reason of his refinement of diagnostic procedures introduced by Auenbrugger and Laënnec. In this relation Flint's particular contribution was his insistence on the importance of pitch. His essay,[5] which won the American Medical Association Prize, stamped his ability as an original observer and as a physical diagnostician. The law on which Flint applied this principle to percussion follows: "An elevation of pitch always accompanies diminution of resonance in consequence of pulmonary consolidation. In other words, dullness of resonance is never present without the pitch being raised." Flint was one of the first to remark the increased resistance on percussion over pleural effusions. He described spontaneous pneumothorax more lucidly than Laënnec. In relation to auscultatory signs, he pointed out that the prolonged expiratory sound of Jackson was inconclusive evidence of incipient tuberculosis unless attended by an elevation in pitch. Flint furthermore carefully analyzed the component phases and the types of breath sounds. Contrary to his advice regarding the use of proper names in designating physical signs, the term, Flint murmur, is in common use to denominate the mitral direct murmur which he first described. "In some cases in which free aortic regurgitation exists, the left ventricle becoming filled before the auricles contract, the mitral curtains are floated out, and the valve closed when the mitral current takes place, and, under these circumstances this murmur may be produced by the current just named, although no mitral lesion exists." Flint's discussions of disease were apparently patterned after Louis and his relation to the development of physical diagnosis in this country closely parallels Louis' position in French medicine.

Fig. 14. Austin Flint (1812–1886).

Austin Flint was ranked as the ablest clinician of his day in America. Samuel D. Gross has left to posterity the best tribute to Flint: "Tall, handsome, and of manly form, with a well-modulated voice of great compass, he is a lecturer at once clear, distinct and inspiring. During his hour in the classroom no student ever falls asleep. He ranks high as a clinical instructor. As a diagnostician in diseases of the chest he has few equals. Nor is this fact at all surprising when we bear in mind the time and the immense labor which, from an early period of his professional life, he has devoted to their investigation. I know of no one who is so well entitled as Austin Flint, Sr. to be regarded as the American Laënnec." Always progressive, Flint accepted the bacterial theory of disease in its infancy and predicted its application to all infectious diseases. In full possession of his faculties and highly esteemed by the medical world, Flint passed away in his seventy-fourth year.

In tracing the progress of physical diagnosis through the vicissitudes of time and changing fortunes, the one factor which remains constant is the service of the individual student or investigator to this advance. The ultimate purpose of medicine is the care of the sick. To this end no phase of the art or science has contributed more effectively than has physical diagnosis, and yet there is at present a heedless tendency of medicine to desert the fundamental bedside observation for the laboratory. Let us reflect on the true proportion of affairs. The hand-servant in medicine bids fair to displace her mistress. Lest the senses be neglected in diagnosis, let us seek a renaissance of the bedside—deadhouse correlation of disease and its manifestations. Then may we say with Robert Graves, "No, God be praised, our predecessors have not toiled in vain; the anxious experience of ages has not been recorded to no purpose."

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[5] Flint, A. Variations of pitch in percussion and respiratory sounds, and their application to physical diagnosis, *Tr. A.M.A.*, Phila., v, 1852.

ADDENDUM

Stethoscope Song

A PROFESSIONAL BALLAD

There was a young man in Boston town,
He bought him a stethoscope nice and new,
All mounted and finished and polished down,
With an ivory cap and a stopper too.

It happened a spider within did crawl,
And spins him a web of ample size,
Wherein there chanced one day to fall
A couple of very imprudent flies.

The first was a bottle fly, big and blue,
The second was smaller, and thin and long;
So there was a concert between the two,
Like an octave flute and a tavern gong.

Now being from Paris but recently,
This fine young man would show his skill;
And so they gave him, his hand to try,
A hospital patient extremely ill.

Some said his liver was short of bile,
And some that his heart was oversize,
While some kept arguing, all the while,
He was crammed with tubercles up to his eyes.

This fine young man then up stepped he,
And all the doctors made a pause;
Said he, The man must die, you see,
By the fifty-seventh of Louis's laws.

But since the case is a desperate one,
To explore his chest it may be well;
For if he should die and it were not done
You know the autopsy would not tell.

Then out his stethoscope he took,
And on it placed his curious ear;
Mon Dieu! said he with a knowing look,
Why, here is a sound that's mighty queer!

The bourdonnement is very clear,—
Amphoric buzzing, as I'm alive!
Five doctors took their turn to hear;
Amphoric buzzing, said all the five.

There's empyema beyond a doubt;
We'll plunge a trocar in his side.
The diagnosis was made out,—
They tapped the patient; so he died.

Now such as hate new-fashioned toys
Began to look extremely glum;
They said that rattles were made for boys,
And vowed that his buzzing was all a hum.

There was an old lady had long been sick,
And what was the matter none did know:
Her pulse was slow, though her tongue was quick;
To her this knowing youth must go.

So there the nice old lady sat,
With phials and boxes all in a row,
She asked the young doctor what he was at,
To thump her and tumble her ruffles so.

Now, when the stethoscope came out,
The flies began to buzz and whiz;
Oh, ho! the matter is clear, no doubt;
An aneurism there plainly is.

The bruit de râpe and the bruit de scie
And the bruit de diable are all combined.
How happy Bouillaud would be,
If he a case like this could find!

Now, when the neighboring doctors found
A case so rare had been described,
They every day her ribs did pound
In squads of twenty; so she died.

Then six young damsels, slight and frail,
Received this kind young doctor's care;
They all were getting slim and pale,
And short of breath in mounting stairs.

They all made rhymes with "sighs" and "skies,"
And loathed their puddings and buttered rolls,
And dieted, much to their friends' surprise,
On pickles and pencils and chalk and coals.

So fast their little hearts did bound,
The frightened insects buzzed the more;
So over their chests he found
The *râle sifflant* and the *râle sonore*.

He shook his head. There's grave disease,—
I greatly fear you all must die;
A slight post-mortem, if you please,
Surviving friends would gratify.

The six young damsels wept aloud,
Which so prevailed on six young men
That each his honest love avowed,
Whereat they all got well again.

This poor young man was all aghast!
The price of stethoscopes came down;
And so he was reduced at last
To practise in a country town.

The doctors being very sore,
A stethoscope they did devise
That had a rammer to clear the bore,
With a knot at the end to kill the flies.

Now use your ears, all you that can,
But don't forget to mind your eyes,
Or you may be cheated, like this young man,
By a couple of silly, abnormal flies.

Oliver Wendell Holmes.

THE CERAUNIA OR THUNDER-AXE

ITS USE IN FOLK MEDICINE

By M. A. VAN ANDEL, M.D.

GORINCHEM, NETHERLANDS

> Fear no more the lightning-flash
> Nor the all dreaded Thunder-stone.[1]

IF the student of folk medicine is anxious to save from oblivion the remains of the beliefs and the sciences of our ancestors still surviving among separate and backward groups of the population of cultivated countries, he will be wise to choose the sentence "nil admirari" as his device. Indeed he will learn, on proceeding with his investigations, that there exists an unlimited stock of medicines and therapeutic measures of which medical men had never dreamt in their philosophy. Nearly every object of animal, botanical or mineralogical origin, every phenomenon of nature is considered able to act upon the body of man and may be used to influence or to promote his health or his prosperity. Those objects which strike the imagination by their peculiar qualities, such as quaint form, brilliancy, bright coloring, awfulness or rarity, enjoy the reputation of containing mighty powers, hidden in them. Many of them are therefore used to combat the diseases and infirmities, which have invaded the bodies of suffering mankind. Such objects are apt to arouse the curiosity and the imagination of one who may have an opportunity to find or to see them and who has no knowledge of their origin or significance. The prehistoric flint tools which are occasionally found by a laborer, who uncovers these relics of an obscure past while digging his field, belong in this category. Such finds are relatively frequent in the eastern provinces of our country, where an aboriginal prehistoric population has left many traces of its existence in the form of tumuli and other burying places. The present inhabitants, however, wholly misunderstand their significance and call the flint-axes, arrowheads and mallets, which they unearth, thunderbolts (*dondersteen*), believing that their origin should be attributed to a flash of lightning, which has penetrated the ground on the very spot where such objects are found. The owners of such thunder-axes attach much value to them, crediting them with the power to protect the house where they are guarded from lightning. This belief in their supernatural origin and their magical protective power is expressed in the following strophe, dating from the seventeenth century:

Cum tonat horrendum, cum fulminat igneus aether
nubibus illaesus coelo cadit iste lapillus.
Qui caste gerit hunc, a fulmine non ferietur
nec domus, nec villae, quibus adfuerit lapis ille.[2]

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[1] Shakespeare, Cymbeline.

[2] de Boodt, Anselmus Boetius. Gemmarum et Lapidarum Historia, Leyden, 1636, *cap*. cclxi.

It is a common rule that man tries to profit by such objects as are gifted with strange faculties to promote his health or welfare or to oppose the infirmities of his body and therefore it is not surprising that these thunderstones are used as medicines against several diseases. According to Mr. J. J. Van Deinse of Enschede, the inhabitants of Overyssel rub the temples of a child, who is in a fit, with them or scrape powder from their surfaces with a nail or a knife, which they then mix with water and administer to the sick child.[3] The illustration reproduced here (Fig. 1) is one of these axes on which the furrows caused by such manipulations are clearly visible. This is at present preserved in the municipal archaeological collection at Enschede. There is a belief that such an axe, lying on the roof of the pig-sty, will promote the growth of the animals and that sick cattle were formerly cured by having their sore spots rubbed with it.[4]

Belief in the wonderful powers of these ancient weapons is not limited to our country. In Saxonia they are thought to protect their owner from nightmare and to cure erysipelatous eruptions. This may be considered as belonging to the category of isotherapy, as such axes by virtue of their power to heal inflammations and similar affections represent the weapon of the fiery-red Donar. The powder scraped from their surfaces is used in that country as a nostrum against diarrhea and especially the powder of such axes as are perforated will effect happy cures. Magister Kundmann[5] states that such stones will protect men and animals from lightning and will cure the hernias of little children, if the affected spot is rubbed with them. They will also cure those who are suffering from jaundice.[6] That these healing powers are attributed to supernatural forces hidden in the thunderstones, may follow from the custom of using prehistoric nephrite axes to chase demons and evil spirits and to cure falling sickness, which generally was imputed to the influence of a supernatural being.[7] According to Black,[8] the people of Cornwall still use water in which flint arrowheads have been bathed to cure diseases, while in other countries such water is considered efficacious in the prevention of female ailments.[9]

Richard Andree[10] describes the results of his investigations respecting the belief in the powers of thunderstones in many parts of the world and proves that popular opinion is nearly identical everywhere. Not only in Europe, but also in many Asiatic countries such as Burma, India, the East Indian Archipelago, China and Japan, their origin is attributed to the lightning, which has penetrated into the earth and has remained there in the shape of a thunder-axe. Such a ceraunia or thunder-axe will rise to the surface within a period, varying from seven days to seven months or years, and will protect anyone who may find it from lightning, evil and disease. Even in

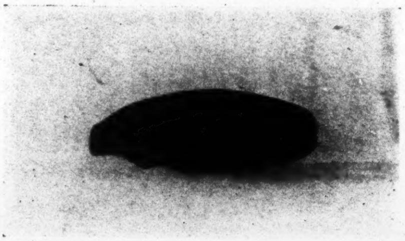

FIG. 1.

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[3] Van Deinse, J. J. Twentsch Dagblad Tubantia, Oct. 8, 1921.

[4] Van den Bergh, A. P. C. Proeve van een Kritisch Woordenboek der Nederlandsche Mythologie, Utrecht, 1846, p. 265.

[5] Kundmann, J. C. Rariora Naturae et Artis item in Re Medica, Leipz., 1737.

[6] Seyfarth, C. Aberglaube und Zauberer in der Volksmedizin Sachsens, Leipz., 1913, p. 262.

[7] Führer, H. Lithotherapie, Historische Studien uber die Medizinische Verwendung der Edelsteine, Berlin, 1902, p. 58.

[8] Black, W. G. Folk-medicine; a Chapter in the History of Culture, Lond., 1883, p. 117.

[9] Thomas, W. and Tavitt, K. The Book of Talismans, Amulets and Zodiacal Gems, Lond., 1914, p. 15.

[10] Andree, R. Ethnographische Parellele und Vergleiche, Leipz., 1889.

Africa and Brazil there exist examples of this belief differing only slightly from those prevailing in Europe. According to Wuttke[11] the Germans interpreted those objects to be the hammer of Thor, which he smote to cause thunder and lightning. They were convinced that each person who obtained one of them was gifted with such magical powers as the ability to fertilize fruit trees, protect babies from witches and promote a prompt delivery.

These communications may be supplemented by many others. In Japan flint arrowheads were thought to have rained from heaven or to have been dropped by flying spirits, and were very popular in former days as amulets to protect the wearer from disease and to avert the evil eye.[12]

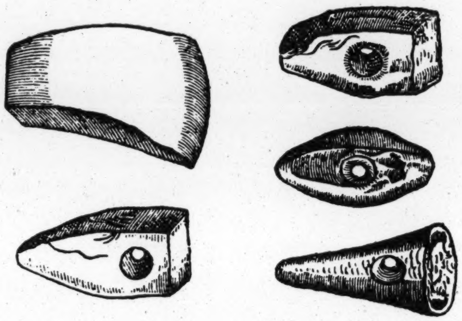

Fig. 2.

Not only the genuine prehistoric tools were used for that purpose but, as their weight and shape afforded some difficulty in wearing them as amulets, they seem often to have been replaced by imitations of a minor size, from which the same effect was expected.

Examples of such amulets in the shape of axe heads and pierced with holes for suspension are found in several countries. Among these an axe head of jade, engraved on both sides with gnostic symbols, may be found in the Egyptian collections of the British Museum,[13] a similar object of slate, engraved with ornamental figures, found in Portugal and dating from the Neolithic period,[14] a little axe of nephrite from New Zealand,[15] and several others of American and European origin are reproduced in the beautiful book of Kunz.[16]

A very old example of such an amulet is a Babylonian axe head, made of banded agate, with an inscription in cuneiform characters, which was probably consecrated to the weather-god Hadad and which bears evidence of the existence of a similar custom among the Sumerians.

It is remarkable that scientific authors of former centuries, in describing these remarkable objects, proclaim the same opinions concerning their origin and their properties as the popular belief of today. Pliny describes such peculiar stones as "nigrae, rubentesque ac similes securibus," saying that those which are black and round are called *betuli*, the longer ones *cerauniae*, and ascribes their origin to a stroke of lightning. In the books of Marbodus (1095–1123), Albertus Magnus (1193–1280), Kunrat von Megenberg (1307–1374) and Bartholomaeus Anglicus (thirteenth century) one may find similar descriptions of the origin and the virtues of the cerauniae, but they agree with Pliny in placing many sorts of stones and fossils such as astrions, belemnites, glossopetrae and others in the same class as the real cerauniae.[17] In his "Gemmarum et lapidarum historia,"[18] Anselmus Boetius dedicates a chapter to the cerauniae, illustrated by a rather good image of these interesting objects (Fig. 2). According to him, some of them have conical holes in their points of equilibrium, shaped to hold handles. This peculiar form, bearing a remarkable resemblance to several kinds of tools, still in use when Boetius wrote his book, has convinced some that those ceraunias are to be considered iron weapons and implements which have been transfigured into stone in the lapse of time. Boetius admits that he should be inclined to agree with this supposition, but he is obliged to reject it, as several trustworthy witnesses have assured him that they have found such stones in trees or houses which have been struck by lightning. Therefore, although their queer shape seems to indicate that they owe their existence to human industry, such evidences induce him to reject this supposition and accept the rather fantastic hypothesis. This hypothesis indicates that such stones are formed by terrestrial exhalations which are condensed in the atmosphere and flung back to the earth when the cloud, in which they are contained, bursts during a thunderstorm. Joannis de Laet[19] describes two species of the stones, one shaped like axes and one like chisels. He says they are chiefly found near the great rivers in Germany, principally the Elbe. As most of them are probably broken by their fall from the clouds, even the holes in some are attributed to that cause.

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[11] Wuttke, A. Der deutsche Volksaberglaube der Gegenwart, Berlin, 1869, p. 88.

[12] Thomas, W. and Tavitt, K. *Op. cit.*, p. 14.

[13] Kunz, G. F. The Curious Lore of Precious Stones, Phila., 1913, p. 122.

[14] Thomas, W. and Tavitt, K. *Op. cit.*, p. 1, Fig. 13.

[15] Kobert, R. Ein Edelstein der Vorzeit und seine Kulturhistorische Bedeutung, Stuttg., 1910, Pl. 1, Fig. 13.

[16] Kunz, G. F. *Op. cit.*, p. 233.

[17] Cogels, P. Ceraunies et Pierres de Foudre, *Bulletin de l'académie d'archéologie de Belgique*, Anvers, 1907.

[18] de Boodt, Anselmus Boetius. *Op. cit.*, *cap.* cclxi.

It is remarkable that the Dutch naturalist Rumphius, who lived as an officer of the East-Indian Company at Ambon, an island in the East-Indian Archipelago, during the last half of the seventeenth century, describes the prevalence of the same belief in that country. It was during his long residence at Ambon that he collected the abundant material for his learned books on the plants, shells and minerals of that country. In his "Amboinsche Rariteitkamer"[20] (The Ambon Curiosity Shop) he describes several thunderstones, ceraunias or *gighi-gontur*, which he has seen or collected. According to the natives and the Chinese dwelling there, the thunder or lightning should be ascribed to the roaring of a great bull, which spits out his teeth. The prehistoric axes and other fossils were considered to be those teeth which had penetrated the earth. Although Rumphius himself does not believe in the existence of the mythical bull, he does not doubt the celestial origin of these mysterious stones and composes a learned scientific hypothesis to explain it. He supposes that they are generated by heavy and metallic vapors evaporating from the earth, which are condensed to their particular form by the heat and the extraordinary forces of lightning. Their queer shape, identical with that of an instrument able to strike or to smite, may be attributed to a martial influence, as all sorts of natural objects are subject to astral powers, which imprint their signature upon them. They were used in Ambon as amulets to procure invulnerability and to cure feverish diseases caused by wetting during a thunder-storm.

He relates that in the Low Countries also such stones are used as medicine. Herdsmen try to cure their sick cattle by having them drink the water in which such a stone is laid and women, suffering from ulcerating breasts, rub them with a stone to alleviate the inflammation.

It seems almost incredible that such an accurate observer (as Rumphius generally proves to be) does not doubt the celestial origin of these objects. This seems the more peculiar as he observes in his description of the *ceraunias metallicae* or *donderschopjes* (thunder spades) that their wonderful shape and resemblance to our common tools led the men in his factory to assert that they were so perfect in workmanship as to be almost inimitable. Yet instead of ascribing these bronze tools to the industry of a former generation, he prefers the artificial explanation that they also are moulded by celestial influences: "The astral smith who suggested to men to forge mallets, axes and chisels, may be able to make such tools without human intervention, in the same manner as he impresses on plants and herbs such signatures as resemble articles wrought by human industry.[21]

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[19] de Laet, Johannis. De Gemmis et Lapidibus. Leyden, 1647, *lib.* II. *cap.* xxiv.

[20] Amsterdam, 1705, *lib.* III. *cap.* viii.

These bronze thunderstones had the reputation of making their bearer invulnerable and increasing the efficacy of the *kris* (Indian dagger) when a fragment of one of them was fastened to its hilt. Olearius (1600–1671) mentions that the same belief existed among his compatriots, who thought that such a stone laid in the pommel of a sword[22] would procure victory over any enemy. A more heroic manner of procuring oneself these advantages and improving one's strength consisted in introducing a piece of such a stone under the skin of the hand, where it might grow in.[23]

This curious belief of the various peoples in the origin and magical powers of thunderstones is an instance of the striking conformity of many of the primitive customs and beliefs found in modern folk medicine, ancient scientific literature and the medical practice of savage and barbarous societies. Such coincidence, not only in fundamental ideas but even in accidental circumstances, may often be found among groups of human society which do not have connection with each other, and is frequently met by everyone which occupies himself with such inquiries.

Perhaps the principal idea of such a custom should be explained by the uniform psychological conditions governing the thoughts and conduct of such groups of humanity as still remain in a state of imperfectly rational, primitive intelligence and who try to explain the phenomena of nature in a childish and simple way. Yet the conformity of details and peculiarities does not agree with the conception that such primitive ideas only arise from a mentality which should scarcely have attained the threshold of consciousness. Although the investigations of Wuttke, Frazer, Levy-Brühl, Marett, Stoll, Freud, Kruyt and others have in many cases succeeded in showing the links which unite such customs, and have detected the psychological basis on which they rest, yet the difficulties offered by such a vast field of investigation are such that even these hypotheses have often fallen short. Although they are able to depict for us the great lines on which such customs are arranged, they have not given us a satisfactory explanation of the remarkable coincidence of the very slightest details which so often occur.

The more we collect the primitive traditions and try to understand or explain them, the more we are puzzled by the intricacy of those questions, which are of such great importance in conceiving the true nature of the birth and growth of the mental faculties of mankind.

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[21] Rumphius. *Op. cit., cap.* ix.

[22] Cogels, P. *Op. cit.*, p. 93.

[23] Führer, H. *Op. cit.*, p. 58.

RABELAIS, THE PHYSICIAN*

By ISADOR H. CORIAT, M.D.

BOSTON, MASS.

> Then carefully go over again the Books of the Greek, Arabian and Latin Physicians, not despising the Talmudists and Cabalists; and by frequent Dissections get thee the perfect Knowledge of the other World, which is Man.[1]

THOSE of us who had read Rabelais in whole or in part in our early youth, were impressed chiefly by his exalted, extravagant and exuberant word pictures, his pornographic wit, his vivid descriptions of reality and the creative impulse delineated in the gigantic figures which flitted across his pages like living and breathing beings. In the evolution of more mature experience, a return to these pages renewed and reanimated the impressions of youth, but there was superadded a deeper insight into the productions of this great genius of the Renaissance. In this renewal of acquaintance with Rabelais, one is reminded of the words of Havelock Ellis:[2]

> These books are apt to repel: nothing indeed, is so likely to shock us at first as the manifest revelation of ourselves. Therefore, such books may have to knock again and again at the closed door of our hearts. "Who is there?" we carelessly cry, and we cannot open the door; we bid the importunate stranger whatever he may be, to go away, until, as in the apologue of the Persian mystic, at last we seem to hear the voice outside crying: "It is thyself."

For Rabelais is ourselves, our unedited, uncensored selves. We turn to him again and again because in his pages we see ourselves, for to paraphrase the words of Lytton Strachey in his brilliant character study of Queen Victoria, we have our thoughts too, in the secret chambers of consciousness.

Rabelais, even in an age when social repression was absent or reduced to a minimum, was unusually free from repressions himself. He wrote as he thought, perfectly free associations without any resistance. He revealed his inner mind, symbolized by those acromegalic, gigantic figures which fleet across his pages, and put into their mouths his personal thoughts concerning the political, ecclesiastical and medical weaknesses and superstitions of his time.

I am concerned therefore in this paper, not with a mere cataloguing of the medical knowledge and phrases of Rabelais, as this has already been admirably done and in great detail,[3] but with the mind of Rabelais the physician, so far as the evidence can be deduced from his writings and the meager facts of his life at our disposal. Any psychobiographical effort which sincerely attempts to penetrate the mental life of an individual when the material at its disposal consists of the published writings and the data of his career, must not pass over in silence, through discretion and prudery, those facts which are omitted in most biographies. Of course, this is not particularly difficult in such a character as Rabelais, because the material of his writings is a revelation of what actually went on in the author's mind. It is true that many passages, because of our social resistances, appear indecent and obscene, but we must at the same time remember that we are dealing with a mind particularly free from social repressions and in an age when freedom of speech and writing was allowable to a greater extent than now. But to the mind of Rabelais, what to us appears shocking and even at times indecent, was a normal and natural method of thinking, undirected and uncensored, as in all works of great genius. Rabelais wrote as he thought: the difficulty with most of us is that we do not write or speak as we think, but are constantly censoring our conscious and unconscious thoughts because of the outward pressure of social repression and custom.

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*Read before the Boston Medical History Club, March 3, 1924.

[1] Pantagruel, Book II, chap. viii.

[2] Ellis, H. The Dance of Life. Pref., Boston, 1923.

[3] See on this point the publications of C. G. Cumston, W. F. Smith, D. W. Montgomery, Felix Bremond and W. G. MacCallum. I wish also to take this opportunity to thank Mr. Alfred Ela, long a student of medical history, for the opportunity of consulting his valuable bibliographical notes on Rabelais.

In this paper I shall attempt to show the dream-like character of Rabelais' thinking in a medicohistorical and medicoliterary sense, as portrayed in the symbolisms, condensations and fantasies of the great romances, "Gargantua" and "Pantagruel," and in addition venture on a theory for which these romances were written. It is true that such an attempt is not without its disadvantages and errors, for if it is so difficult to construct the character of an individual from the frail and ever-changing human material which confronts us in everyday life, how much more difficult must it be, how much more easily can errors creep in, when one attempts to reconstruct a personality who died centuries ago? Yet the material is at hand in the writings, for a man's literary contributions are faithful reflections of his mind, either, as I had previously stated, in the form of an unconscious incubation or a conscious protest.[4]

A psychobiographical effort in this direction can in some measure actually penetrate the psychic life of the person analyzed, particularly when, as in the case of Rabelais, he reveals his entire personality, without censorship or prudery, even emphasizing those erotic activities which most biographies or autobiographies pass over in silence.[5] Although the material is abundant, its interpretation offers certain difficulties, because beneath the satire, which is utilized as a cover for his deeper thoughts and motives, there lies that high seriousness which is the characteristic of all great art, tragic or comic.

The two great romances of Rabelais, entitled respectively "Gargantua" and "Pantagruel," are primarily satirical, directed against the ecclesiastical, political, social and medical foibles of his time. It is with the medical satire that we are particularly concerned in revealing the mind of Rabelais, the physician, and his attitude toward the medical fantasies and misconceptions of his period. The medical knowledge of Rabelais was enormous and scholarly, witness for instance his familiarity with syphilis and the fact that he edited the first accurate Greek text of the "Aphorisms" of Hippocrates in 1532.[6]

What then are the chief components of medical satire and what is its purpose? These questions can be best answered, selecting those passages which particularly refer to Rabelais, by a few quotations from a previous contribution on the psychology of medical satire.[7]

> Psychoanalytic investigation has pointed out that a lack of the sense of humor can probably be attributed . . . to a strong repression of the exhibitionistic impulse. Freud has shown (Wit and the Unconscious) that the release of this exhibitionistic impulse from the repressions imposed upon it by the social codes of behavior, is of the greatest importance in the development of humor. There is a liberation of pleasure from sources that have undergone repression and "the main character of wit making is to set free pleasure by removing inhibitions. Wit makes possible the gratification of a lewd, hostile craving, despite the hindrance which stands in the way; it eludes the hindrance and so derives pleasure from a source that has become inaccessible on account of the hindrance." This hindrance . . . is nothing but the repression employed by the higher degree of culture and education to prevent these unconscious motives from forcing an outlet into the conscious thinking . . .

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[4] Coriat, Isador H. The Hysteria of Lady Macbeth, Boston, 1920.

[5] A prominent exception to this is found in the autobiography of Benvenuto Cellini (translated by John Addington Symonds).

[6] Taylor, H. O. Greek Biology and Medicine, Boston, 1922.

[7] Coriat, I. H. The psychology of medical satire, ANNALS OF MEDICAL HISTORY, III, iv. 403, 1921.

> It is in medical satire that we find the most exquisite examples of this kind of humor, that is, the aggressive or critical satire and the strong emphasis placed upon the sexual element, sometimes coarsely, sometimes as a delicately veiled joke, depending on the degree of repression of the creator of the satire and on the development of the secondary elaboration. It is rather difficult to explain this tendency, except perhaps that the physician and satirist of medical subjects unconsciously feel that the erotic can be emphasized, even rather broadly and obscenely, without shocking the public morals, because of the peculiar relations of the physician to society and to the fact that society tolerates less sexual repression in speaking of strictly medical subjects . . .
>
> Obstetrical or sexual subjects are very prominent in medical satire as shown in the various designations referring to the sexual, obstetrical or excremental organs, functions or material . . .
>
> The laughter induced acts as a discharge or release from this repressed psychic energy . . .
>
> Thus in medical humor, where physicians or new medical discoveries are satirized, there is always an exaggeration or displacement of the actual situation or idea to be ridiculed . . . (The) laughter is produced by the sudden release and condensation of repressed and socially forbidden impulses.

Thus the pleasure in reading Rabelais arises from the fact that something is actually gratified which would otherwise remain ungratified and unfulfilled, namely the unconscious material which contains the repressed portion of our obscene thoughts, both sexual and anal-erotic. The mechanism of wit and the mechanism of dreams are alike, and so in Rabelais, as in a dream, we see the unconscious revealed, but grotesque, distorted, displaced and condensed. This is not only the Freudian view, but even Bergson is forced to admit that "comic absurdity is of the same class as that of dreams."[8]

A beautiful example of this dream-like condensation in Rabelais is found in the dialogue between Trouillogan the Philosopher and Panurge on the subject of marriage.[9]

> PANURGE. Lord help us! By the Death of an Ox, I sweat with hard work and feel my digestion interrupted. All my *phrenes, metaphrenes and diaphragms* are in Suspense and distended on the Rack to *incornifistibulate* in the Game-Bag of my Understanding, your various Sayings and Answers.

The word "incornifistibulate" is a fusion, a condensation, the formation of a mixed word such as often occurs in a dream. Similar condensations repeatedly occur in the work of Lewis Carroll, particularly in "Alice in Wonderland," "Through the Looking Glass" and "Sylvie and Bruno." These condensations and distortions are found particularly in the famous Jabberwock poems and in the Preface to "The Hunting of the Snark." Lewis Carroll refers to them as "Humpty-Dumpty's theory, of two meanings packed into one word like a portmanteau." The following significant passage[10] has a certain medical interest. "You know you can't see a *Flea* properly without a *magnifying* glass, what we call a *Microscope*. Well just in the same way you can't see an Elephant properly without a *minimifying-glass*. There's one in each of these little tubes. And this is a *Megaloscope*."

To return to Rabelais, the curious word "Incornifistibulate" is a condensation of several words as follows: Cornu referring to cornu ammonis, fistula (fistula in ano), tibia and fibula. The final syllables, "fistabulate" are a condensation of fistula, fibula and tibia.[11]

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[8] Bergson, H. Laughter, an Essay on the Meaning of Comic, 1911.

[9] Pantagruel. Book III, chap. xxxvi. The translation used throughout this paper is by W. F. Smith (London, 1893) which is accurately edited from the earliest editions and from a recently discovered manuscript of the fifth book in the Bibliothéque Nationale.

[10] Carroll, L. Sylvie and Bruno, concluded.

[11] This condensation is explained in a similar manner without any Freudian interpretation, by W. F. Smith, in a footnote explaining this strange word.

In Rabelais, so great is his astonishing genius, that we are not only at the threshold of the unconscious and merely given transitory peeps within, but are actually within the unconscious itself, have crossed its threshold and are face to face with the unedited and uncensored primordial instincts of human nature. This type of writing is very unusual and indicates the highest type of genius. Certainly it has not been accomplished in contemporary literature, except perhaps in Joyce's "Ulysses" and to a lesser degree in his "Portrait of an Artist as a Young Man." We find in Rabelais what is within us all, but repressed through social conventions, in a startling, literal and almost uncanny form. Here, however, it is portrayed with so little prudery that the individual reader shrinks from it and society and legislative repression has placed a ban on it, so that the word "Rabelaisian" has become synonymous with the forbidden and immoral. This because both the individual and society do not wish to admit the presence of similar repressed thoughts in the personal and collective unconscious.

In the light of all this, why were such books written? We have here the deliberate and spontaneous creations of Rabelais' mind. What, then, was their purpose? Certain biographical data may perhaps throw some light on what is modestly put forth as a provisional theory. As shown by extracts from the registries of the Faculty of Medicine, Rabelais was at Montpellier in 1530 and finally proceeded to the degree of bachelor of medicine. It was here that he first witnessed the tragi-comedy of the man who married a dumb wife, in which he mentions himself as acting.[12] This story was also cleverly utilized by Anatole France in his Rabelaisian medical comedy of the same title, a worthy contemporary counterpart of the medical comedies of Molière.

It was at Montpellier that Rabelais, in order to obtain his licentiate, lectured on Galen and Hippocrates and edited the "Aphorisms" of the Father of Medicine in 1532. Evidently he edited the text very carefully, because in the "Epistle of Dedication to the Aphorisms of Hippocrates," dedicated to the Bishop of Maillezais, he states as follows:

> Last year when I was publicly expounding the Aphorisms of Hippocrates and afterwards the Ars Medica of Galen to a crowded audience at Montpellier, I noted several places in which the Interpreters were not satisfactory to me. For on comparing their Translations with a Greek copy—a very old one in my possession, besides those which are in general Circulation, which was most elegantly and accurately printed in Ionian Characters—I discovered that they had omitted very much, had foisted in some foreign and spurious matter, had in some points failed to bring out the meaning, and in not a few places made an Inversion rather than a Version. If in any case such Conduct is censorable, in Physicians' Books it is even Criminal for in them a single word added, or struck out, nay even the Inversion of an Accent, or its Addition in a wrong Place may often cause the Death of Many Thousands of Men.[13]

We can readily see from this quotation how accurate a thinker Rabelais was and how seriously he took his chosen profession of medicine. In 1532 he settled at Lyons, dating from which period he assumed the title of Docteur en Médecine. At the same time he was attached to the hospital at Lyons and also did some work for the printer Sebastian Gryphius. It was during this period also that he brought out his Gargantua and Pantagruel. The first edition of Gargantua was published about 1535, and in 1542 revised, certain alterations being introduced in order to allay the attacks and virulence of the Sorbonne. Pantagruel was first published in 1534 and revised in 1542. Both the revised editions of Gargantua and Pantagruel were issued at Lyons.

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[12] Pantagruel. Book III, chap. xxxiv. Rabelais gives here the names of the various actors, including himself.

[13] Dated Lyons July, 15, 1532.

The reason for inserting these biographical and bibliographical data is to furnish the background for the tentative theory already briefly referred to above. It seems, after a careful study of the material, that the writing of these books was not only to amuse, but had a more practical aspect, namely, to act as a therapeutic agent or medium for his patients. On the basis of the emotional release which we know is induced by laughter, may not these romances of Rabelais have also had a therapeutic purpose, in order to give vent to the pent-up, emotional anxiety which we physicians know is nearly always the invariable accompaniment of disease? Of course this theory may appear a little fanciful, but nevertheless it has certain facts to sustain it, particularly the fact that they were not written, or at least published, until Rabelais became a physician, when he saw the practical need of some such a form of psychotherapy.

This theory can also be strikingly confirmed by the following passage:[14]

> Seeing all this World in eager Appetite to see and read my writings, on account of the preceding Books, they have spit in the Bason, that is to say, they have by their Handling, bewrayed, decried and calumniated them all, with this Intention, that no one should heed them, no one should read them, save their own Poltroonities. I have seen this with my own Eyes—it was not with Ears—nay, they go so far as to preserve them religiously during their offices at Night, and employ them like Breviaries for Use by Day, they have taken them from the Sick, the Gouty and the Unfortunate, for whom in their sore Discomfort, I had made and composed them.

It is well known that laughter acts as an emotional discharge, this psychic expenditure releasing the forces and the pent-up energy of suppression and repression and producing a certain therapeutic effect. This pent-up energy is laughed away sometimes through an excessive expenditure of emotion, particularly when the element of surprise enters in, and there follows a very sudden release of this suppressed energy. This is particularly noticeable when the material which induces the laughter is of a sexual or anal nature, because then the obscene word has the peculiar power of compelling the person to imagine the object it denotes, whether this word is either seen or heard.

When we come to discuss the purely medical aspects of Rabelais, we find a mixture of medical science so far as it had developed in his day, combined with the fantastic superstitions of his age. In his ideas of syphilis, however, he was exceedingly accurate, for instance, his description of mercurial stomatitis from inunctions. The following passage is an example:[15]

> But what shall I say of the poor pocky and gouty Patients? O how many times have we seen them—at the time they were well anointed and thoroughly greased, with their Face shining like the Key-plate of a Meat-safe, and their teeth rattling like the Notes on the Manual of an Organ or Spinet, when they are played upon, and their Throats foaming like a Boar's.

Mercury was employed very early in the history of European syphilis as a specific and so was well known to Rabelais. Mercurial inunctions were used in 1495 in Perugia, Italy. In France the disease was called *la grosse verolle* as early as 1501, and that same year there appeared in Lyons, France, a treatise entitled "Regimen Sanitatis en Français."[16] It was divided into three parts: (1) "Le Remede contre le peste," (2) "Ung petit traict des urine" and (3) "Ung remede contre la grosse verolle." Did Rabelais get any information from this book? It will be remembered that his earlier works were published in Lyons, where he also was employed as a publisher's assistant.

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[14] The old prologue to the fourth book of Pantagruel. This prologue, published at Lyons in 1548, was afterwards suppressed in the Paris edition of 1552, and in its stead appeared the "Epistle Dedicatory" to the Cardinal of Chatillon.

[15] Pantagruel. Prologue.

[16] See Sudhoff, K. Aus der Frühgeschichte der Syphilis, 1912.

When Epistemon returns from Hell and the Elysian Fields[17] he describes among other things the following:

> "How! said Pantagruel, are these pockified Folk in the other world?"
>
> "Certainly," said Epistemon, "I never saw so many, there were more than a hundred Millions there, for be assured that those who have not had it in this World, have it in the other."

The uterine conception of hysteria as described by Rabelais is really a vivid summary of the conceptions of his time concerning the protean manifestations of this neurosis.[18]

> In sooth, Plato cannot determine in which Rank he ought to place them, whether in that of the rational animals or that of the brute Beasts: for Nature hath placed within their Bodies, in a secret and intestine Place an Animal, a Member, which is not to be found with men, in which are sometimes engendered certain Humors, salty, nitrous, caustic, sharp, nipping, shooting and eagerly tickling: so that by their Pricking, painful Irritation and pigging Itch—for this member is wholly compact of Nerves and of a lively Feeling—their whole Body is shaken and embrangled, all their Senses ravished, all their Passions consented unto, all their Thoughts confounded . . . because this terrible Animal is in close Connection with all the principal Parts of the Body, as in Anatomy is evident.
>
> I do call it an Animal . . . recognizing in its own proper Motions of Suffocation, Precipitation, Corrugation and of Indignation, so extremely violent, that by them is taken and removed from the Woman all other Senses and Movement whatsoever as though she were in a swooning Lipothymy, Syncope, Epilepsy, Apoplexy and True Resemblance of Death.
>
> Furthermore we find in it a manifest Discovery of Scents, and Women feel it fly from rank and unsavory Odors[19] and follow after aromatic Smells.

What could be more vivid than this description of hysterical swooning, stupor and globus and the alleged pharmacological effect of certain drugs upon the wanderings of the uterus, which up to very recent times, was considered the prime etiological cause of hysteria.

As a further commentary on this passage, the following may be quoted from a previous contribution to the subject:[20]

> An interesting analogy may be drawn when it is stated that pleasant odours, such as various perfumes, stimulate the sexual feeling and act as aphrodisiacs, whereas the disagreeable odours of valerian and asafoetida tend to inhibit the sexual feeling. When we realize the erotic importance of perfumes in the cultural and aesthetic history of mankind, we can easily see how an evil-smelling substance was almost arbitrarily, perhaps unconsciously selected to drive away the sexual feeling, or in the primitive conception of the physically erotic basis of hysteria, to repulse that uterus whose wanderings about the body were held directly responsible for the hysterical symptoms . . .
>
> This use of evil-smelling drugs in hysteria . . . is an example of what may be termed rationalization. Since neither clinical experience has upheld the old conception of the wanderings of the uterus as a cause of hysteria, nor pharmacological experiment has ever demonstrated that asafoetida or valerian have the slightest anti-spasmodic action, it must be concluded that such treatment is merely a blind adherence to tradition, the origin of which has been largely forgotten.

In spite of Rabelais' satire and levity, these aspects are only superficial and conceal a high seriousness, which is a characteristic of all great genius. It has been said that all genius possesses certain childhood characteristics, as for example the impetuous behavior of all great men, whether artists or writers, which is excused on the supposition that they are different from ordinary human beings. In certain passages Rabelais has shown these childhood characteristics and one of these may be selected to demonstrate one of these phases, namely, his infantile conception of the process of parturition.[21] This is of course directly contradictory to his medical training, in fact to the experience of any sophisticated adult, and consequently can be explained only on the basis of the infantile nature of that unconscious which furnishes the motive power and inspiration for all genius.

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[17] Pantagruel. Book II, chap. xxx.

[18] Pantagruel. Book III, chap. xxxii.

[19] Probably referring to the administration of valerian or asafoetida.

[20] Coriat, Isador H. An ancient Egyptian medical prescription for hysteria. ANNALS OF MEDICAL HISTORY, New York, III, i, 14, 1921.

[21] Pantagruel. Book II, chap. xvii.

It is a well-known fact in the analytic psychology of childhood, that children up to a certain age imagine childbirth to be a process analogous to the ingress and egress of food, taking place at the same alimentary orifice, in fact, all cases of hysterical vomiting, when subjected to a careful analysis, can be found to originate in such infantile fantasies. In fact, Freud[22] states: "Outside of analysis one only seldom remembers the investigation corresponding to the early childhood years; it had long merged into repression, but its results were thoroughly uniform. One gets children by eating something special (as in a fairy tale) and they are born through the bowels, like a passage." In the passage from Rabelais previously referred to, there occurs a vivid description of such anal ideas of birth, as they are interpreted in very early childhood.

The two chapters on dream interpretation are characteristic of Rabelais' satiric destruction of the anagogic interpretation which was current in his time.[23]

There are two descriptions of supreme medical interest, one on the mannerisms and behavior to be assumed by the physicians towards their patients[24] and the other satire on a medical consultation.[25] In the first of these there occurs the following passage:

> On a Passage of the Sixth Book of the Epidemics of the said Father Hippocrates, we labour in the Disputation, not if the Countenance of the Physician when moping, sour, morose, disagreeable, down-hearted, depresses the Patient, and the Countenance of the Physician when joyful, serene, pleasant, smiling, open, elates the Patient—that is proved and certain—but whether such Depressions and Elations proceed from Apprehension of the Sick man, on contemplating these Qualities, or whether it is by Transfusion of the Spirits, serene or gloomy, joyous or sad, from the Physician to the Patient, as is the Opinion of the Platonists and the Averroists. Since then it is not possible that I can be called in by all the Patients, that I can take all sick folk in my Charge, how envious it is to take from those who are languishing and sick the Pleasure and joyous Pastime—without offence be it said to God, the King, or any other—which they find in my Absence in listening to the Reading of these joyous Books!

What a vivid description we have of that transference which is so essential in all lines of medical practice and at the same time, this passage tends to verify the theory previously elaborated, that one of the unconscious or conscious purposes for which Rabelais wrote his romance was therapeutic.

In the four chapters in Pantagruel concerning the medical consultation on marriage, the physician is named Rondibilis, who is also mentioned in a previous chapter[26] as "our Master Rondibilis." The physician referred to is in all probability Guillaume Rondellet, physician to Henry II, whom Rabelais had known at Montpellier. It was he who induced Henry II to build an anatomical museum at Montpellier. It seems fairly certain that Rabelais paid his fee for matriculation at Montpellier to Rondellet. At that time Rabelais was in needy circumstances and being unable to furnish the necessary amount immediately Rondellet recorded this and was subsequently satirized in this medical consultation.

Another aspect of Rabelais' intellect, coming as it does in the midst of the vast, grotesque and timeless world of his unconscious, the very quintessence of seriousness and sublimity, are the great passages on the death of Pan.[27] This narrative alone, with its tone of reverence and the highest religious fervor, is enough to silence those who see nothing but the strictly pornographic in Rabelais. Like all great geniuses, there were two aspects to his personality, the so-called obscene and the sublimation of these tendencies into the highest ethical and moral thinking.

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[22] Freud, S. Three Contributions to the Theory of Sex, Wash., 1918.

[23] Pantagruel. Book III, chaps. xiii, xiv.

[24] Pantagruel. Prologue to book IV.

[25] Pantagruel. Book III, chaps. xxxi, xxxiv.

[26] Chap. XXIX.

[27] Pantagruel. Book IV, chap. xxviii.

Another passage, showing Rabelais' seriousness and his mastery of condensed narrative, set like a jewel in the midst of the satirical conglomeration of medical lore, is the story of a man who married a dumb wife[28] which has been so cleverly utilized by Anatole France in his Rabelaisian medical comedy of the same title.

> "I was there," quoth Epistemon. "The Good man, her Husband, wished that she could have Speech. This was done for her by the Skill of the Physician and Surgeon, who severed for her an Encyliglotte that she had under her Tongue. Her speech once recovered, she spoke so long and so loud, that her Husband returned to the Physician for a Remedy, to make her hold her Peace. He replied that in his Art he had Remedies proper to make Women speak, but he had none to make them silent: that the only Remedy against this interminable Talking of the Wife was the Deafness of the Husband. The wretched Creature was then made deaf, by means of some Charms or other that they used. His Wife seeing that he had become deaf, that she spoke in vain and that she could not make herself heard by him, became raving mad. Then the Physician asked for his Fee, but the Husband answered that in sooth he was deaf, and did not understand what he asked. The Physician threw on his Back some Powder or other, by virtue of which he became half-witted. Then the half-witted Husband and the raving Wife joined together and so belaboured the Doctor and the Surgeon that they left them half dead. I never in my life laughed so much as I did at that Buffoonery."

Truly, again to quote Rabelais, Truth is the daughter of Time, for in Rabelais we find the genuine and truthful thoughts of our inner lives, and so he has survived the literary, social and economic changes of the centuries. For only that survives, which is the truth, in science as well as in art and literature.

By a peculiar and strange coincidence, two of the world's greatest geniuses, Shakespeare and Rabelais, both possessed the inner consciousness and conviction of the indestructibility and immortality of their work, Truth again being truly the daughter of Time. In the "Sonnets," Shakespeare says:

> Not marble, nor the gilded monuments
> Of princes, shall outlive this powerful rhyme.

And Rabelais expresses the same thought the same certainty of literary immortality:[29]

> A Cart-Load of Books which seemed florid, flourishing and flowery, like gay Butterflies, but in reality were tiresome, tedious, dangerous, knotty and dark as those of Heraclitus, obscure as the Numbers of Pythagoras, who was King of the Bean, as Horace is Witness: these Books, I say, shall perish and shall no more come to hand, and be no more read or seen. Such was their destiny, such was their predestined End.
>
> In their stead have come up Beans in the Pod; that is, these merry and fruitful Books of Pantagruelism which are at this present in Common Fame and good Sale in expectation of the Period of the following Jubilee: to the Study of which Books the World is devoted: therefore is the World called wise.

And so we leave Rabelais, physician, classicist, typical child of the Renaissance, a man unusually free from repression, even in an age when social repression was reduced to a minimum. Only a few of the prominent features, medical, literary and characterological of this remarkable man have been emphasized, but enough has been described to show that we are in the presence of a unique and universal genius. Rabelais was primarily a man of letters, his medical knowledge was a mere appendage, a utilization of the material which as a physician he gathered from study and experience, all interwoven so deftly into his fantastical romances, that it is difficult to unravel the threads, to tell where the literary man ends and the physician begins. Even viewed in their purely literary aspects, however, his works are of paramount medical interest, for consciously or unconsciously he utilized his unique genius for the production of laughter, in a therapeutic sense, as a release for his patients from the pain and discomfort of disease.

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[28] Pantagruel. Book III, chap. xxxiv.

[29] Pantagruel. Prologue to Book v.

HISTORICAL NOTES ON SMALLPOX AND INOCULATION*

By CHARLES GREENE CUMSTON, M.D.

GENEVA, SWITZERLAND

IN a dissertation upheld at Jena in October, 1711, entitled "Præservatione variolarum," the author, J. C. Richter, closed with the following paragraph:

> Coronidis loco addemus, quod B. Daniel Ludovici consignatum reliquit, ex relatione Dn. Hoffrock, ex India, reducis 1672. Cum in Javæ Batavia nigritæ illius variolis corriperentur, iisque adhiberat medicos nostro more procedentes, aliquot interiisse. Id audientes alii nigritae petierunt, ut correpti alii ex eius servis sibi relinquerentur. Factum ita, correptisque primo die dedere acetarium ex cucumeribus cum olivo, *einem Turckensalat;* secundo die lac ebutyratum, ***Buttermilch***, ad satiem; tertio et quarto in profluente ter in die merserunt capitetenus, inque lecto sic reposuere. [In conclusion I would add what B. Daniel Ludwig has left in writings (in his papers) from a narration given him by D. Hoffrock who returned from India in 1672. At Batavia, on the island of Java, his negro slaves developed smallpox, whereupon he employed physicians who resorted to our ordinary measures of treatment, with the result that some died. Other negroes, hearing this, asked that the remaining sick slaves might be left to their care. This request was granted and on the first day they gave the patients cucumbers with oil (*Turckensalat*); on the second day buttermilk to satiety; the third and fourth days they plunged the patients up to their heads in running water three times a day and then put them to bed in this state.]

I merely quote this paragraph to show the state of medical practice in regard to smallpox among the people of Java two hundred years ago. That certain forms of paralysis developed as a sequel to smallpox in former days, an unknown occurrence in our time, is evident from a dissertation by J. B. Gschwend of St. Gall, Switzerland, entitled "De reliquiis variolarum tam præservandis quam curandis," upheld at Halle on July 24, 1751. The remarks of the author relating to this complication and its treatment are given in the following quotation:

> Paralysis, quæ, post variolas remanens, intra ipsam cranii thecam sedem suam habet, difficillime expurgnatur. Spes tamen curationis haud frustranæ affulget, si juniora adhuc et in optimo ætatis flore constituta occupat corpora. Cum autem causa rebellis hujus affectus in sero æri stagnante, nervosque cerebri et medullae spinalis comprimente, imprimis quærenda sit, præcipuus medentis labor eo dirigendus erit, ut illud ipsum resolvat et a partibus affectis derivet. Hoc vero, quoad fieri potest, perite efficit, si remedia in usum vocat, quæ leniter stimulando amissum nervosarum partium sensum paululam excitant, sicque simul abundans, quod ipsis incumbit, serum dispellunt. Tali virtute non solum splendent remedia alvum ducentia, stimulo quodam armata, sed ipsa quoque diaphoretica et diuretica, cujus generis sunt, Tinct. antimonii acris, spirit. bezoard. Bussi, liquor C. C. succinatus, ess. succini, indeque parata mixtura tonico-nervina Stahlii, itemque sequens mixtura: Rec. tinct. antimonii acris unc. sem. Liqu. miner. anod. Hoffman. drachm. ii bals. vitæ ejusdem spir. salis ammon. urinos. ana drachm. i. M. Horum omnium autem effectus eo magis adjuvatur, si infusa ex herbis meliss. Turc. beton. rosis marini, salviæ, puleg. flor. arnicæ, lavendulæ et similibus composita, vel etiam decocta ex rad. chin. rafiign. lentisici, sassafras, santali rubri et viseo querno, simul in usum vocantur. Nec dubitarem, quin in tali paralysi, quæ a lympha spissa et acri, per variolas contracta,

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* Read at the annual meeting of the Swiss Society of the History of Medicine, Zermatt, Aug. 30, 1923.

suos repitit natales, curatio per æthriopem mineralem mercuriumque dulcem instituta, vel ea etiam quam infra (referring to paragraph li) ex Hoffmanno citavi, commodum inveniat locum, ideo quod gutta serena, cui hæc opposita est, eandem cum paralysi agnoscit causam.

[It is most difficult to cure paralysis remaining after smallpox which has its site in the skull. However, there is hope for a perfect cure if the subject is young and in the full vigor of life. Now, since one must look for the cause of this rebellious affection in a humor which collects in the air and which compresses the nerves of the brain and cord, the physician's principal task is to reduce this humor and withdraw it from the diseased region. But it is especially efficacious to employ, as far as possible, remedies which slightly awaken the lost sensibility of the nervous structures with a mild stimulation and which, at the same time, expel the abundant humor which has collected in them.

This property belongs not only to purgatives which possess a certain stimulating action, but also to diaphoretic and diuretic drugs, viz.: tinct. antimonii acris, spiritus bezoard. Bussi, liquor cornus cervi succinatus, essentia succini and Stahl's tonico-nervine mixture prepared with oil of amber, and also the following mixture:

℞. Tinct. antimonii acris..........	℥1½
Liq. min. anod. Hoffmanni......	ʒ2
Balsam vital	
Spir. Sal. ammon. urinos āā.....	ʒ1

The effect of these drugs will be all the more intense if, at the same time, an infusion of balm-mint, betony, rosemary, sage, pennyroyal, arnica, lavender, etc., as well as decoctions of cinchona root, mastic-tree, sassafras, red santal and mistletoe of the oak-tree be exhibited. Nor do I doubt but that in paralysis of this kind, the result of a thick acrid humor developed by the smallpox, treatment with Hg. sulphide or calomel, or even that which I cite from Hoffmann further on, is indicated, because gutta serena[1] which is treated by the same means, has the same cause as the paralysis (under consideration).]

The practice of inoculation was introduced into America at Boston by Dr. Zabdiel Boylston[2] in 1721 and later into Germany. The following remarks quoted from a dissertation upheld by C. W. Frauendorff at Halle in June, 1742, entitled "Qua de variolis nuper quaesita aliqua expenduntur," show that inoculation was being carried out in Germany to some extent prior to 1742.

Mature notitia hujus rei cum Germanis etiam communicata fuit. Nam Ephemeridum Academiæ Naturæ Curiosorum Centuriæ v. quae A. 1717 lucem adspexit, inserta legebatur historia variolarum, quae per insitionem excitantur, Constantinopoli 1713, scripta ab Emman. Timonio; ibidemque exhibentur Jacobi Pylarini de eodem argumento exarata ad Wilhelm Serhardum epistola, quae Venetiis 1715 typis publicis excripta ante prodierat . . . Transiit ex Britannia curatio haec in Germaniam ibique in principum etiam corporibus feliciter celebrata fuit. Celeberrimum virum D. D. Werlhofium medicum in aula Hannoverana regium, cujus disquisit, de variolis et anthracibus, pag. 17 de hac re videatur. [At an early date the reports of this event (inoculation) were communicated to the Germans. In fact, in the Ephemeridum Academiæ Naturæ Curiosorum Centuriæ v, published in 1717, there is the history of (cases of) variola produced by graft, by Emman. Timonio of Constantinople (1713); there is also a letter from Jacob Pylarinos on the same subject, addressed to W. Serhard. . . This treatment came to Germany from England, where it was practiced successfully, even on the persons of princes. In this respect we have the testimony of a famous man who was present at the operation, namely D. D. Werlhof, physician to the Court of Hanover.]

Boyer's thesis, upheld in February, 1717, at Montpellier, is interesting because it is the first French work in which reference to inoculation is made and also because the thesis was published one year before Lady Montagu had her only son inoculated.[3] No further attention was paid to inoculation in France until fourteen years later, when Marcot, in November, 1731, dealt with the subject in a public disputation for the chair left vacant by the resignation of Astruc of the Faculty of Montpellier. Marcot was highly in favor of the practice of inoculation but, strange to say, the first inoculation practiced at Montpellier was performed by a physician of Nimes. In the latter city it had been adopted with success. The first inoculation was given on May 15, 1757, from a thread impregnated with virus which had been obtained from Geneva in October, 1756. Dr. Tronchin, who had inoculated the children of the Duke of Orléans that same year was probably the donor of the virus.

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[1] Gutta serena was the term employed for blindness resulting from "stoppage of the optic nerves."

[2] Coleman, James. A Narrative of the Method and Success of Inoculating the Smallpox in New England, Boston, 1722.

[3] March 18, 1718.

Inoculation was not readily accepted in Montpellier as is shown in the following passage from H. Fouquet:[4] "Although for some years it (inoculation) was practiced with success at Nimes under the auspices of such practitioners as Razoux, Deydier, Pignol, Nicola and others, Montpellier a few months since had only six inoculated persons within its precincts."

Boyer's thesis is entitled "An variolae sint morbus affinis febribus acutis, aut malignis phlegmonodies, et an eâdem methodo curari possint." The president of the thesis was François Chicoyneau, one of the family of medical men which was all-powerful at the Faculty of Montpellier and whose portrait, now at that famous school, is reproduced here.

The following quotation from his thesis gives Boyer's opinions on inoculation:

> An autem uti liceat, non modo propositis, huc usque diversis indicatorum auxiliorum generibus, sed et scarificationibus, seu incisionibus, in his tegumentorum partibus, quæ remotae sunt a corporis centro, ut in artuum pingui, carnosaque cute; ideo nempe, quod hoc artis præsidio leves excitentur inflammationes, aut suppurationes, quarum ope periculum ab internis averti possit, cum ejusmodi salutari velut artificio, sedes seminio, sue stimulo phlegmonodeo paretur, in qua sævitiem consuetam exerceat absque fatali vitæ jactura, an inquam, id genus præsidii salutis causa sit adhibendum non parum facit ambiguum mos ille singularis, qui jam invaluit apud orientales populos, variolas nempe per insitionis, seu inoculationis speciiem quamdam, in sanum al ægro subjectum transferendi, de qua fit accurata mentio in Ephemeridibus Celeberrimi collegii Trevisensis, ex quarum lectione constat, quod Constantinopoli narratum nobis, et confirmatum fuit a viris fide dignissimis, hanc operationem, ea ferme methodo apud Turcas, præsertimque Circassienses, Armenios, et Georgianos, felici cum successu celebrari.

FRANCISCUS CHICOYNEAU REGI A SANCT CONSILIIS IN SUPREMA (1672–1752).

> Nimirum in curriculo tempestatis autumnalis, in qua propter madorem per æra, terrasque diffusum, ignium variolosorum vehementia mitescit, eligitur adolescens, firma, sanaque corporis constitutione præditus, variolis affectus, jam versis in suppuratum, seu maturo, laudabilique pure turgidis, ita ut pustulæ distinctæ sint, seu ex genere secretarum, elatam, et subrotundam, tantisper acuminatum, ob rationes ex prognosi secundi stadii petendas; quedam autem ex his pustulis acicula pertunduntur decimam secundam versus, aut decimam tertiam morbi diem, quo tempore consuetis ex observatis constat, purulentam materiem ad perfectam maturitatem perve-

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[4] Fouquet, H. Traitement de la Petite Vérole des Enfants, Amsterdam, 1772.

nisse; pus interim ex pertusis papulis effluens excipiendum idoneo vasculo, calidumque foveri debet: mox factis prius aliquot incisionibus, diligenter inserendum cuti carnosæ brachiorum (exampli causa) vel tibiarum illius in quo variolas excitare decretum est, sic ut misceatur cum sanguine, qui manat ex exiguis inflictis vulneribus, dein operiundis dimidita parte corticis nucis juglandis, quæ firmiter in eo situ detinenda fasciarum ope, partem incisam obducentium, ut pus inclusum perstet; postmodum attenditur, ægrum decumbentem temperatum ærem spirare, tum et omni carnium esu privari, per spatium vigintiquinque dierum, quarum septima, videlicet ab inoculationis die, numeranda, pustulæ variolasæ feliciter erumpunt, exiguo numero, formæ decentis, et secretæ, quæ brevi maturitatem requisitam affequuntur, exsiccatæque decidunt, nulla prorsus relicta cicatrice, si loca partium incisarum excipiantur, affirmatur insuper, ægros quibus eo loci quo pus inoculatum est, solummodo pustulæ subnascuntur, his imposterum immunes vivere per totum illud quod superest ævi, licet nulla prorsus adhibita cautione, variolis affectos frequentent: iterumque narratur frustra prælaudatum experimentum fieri, seu excitari denuo nequaquam posse variolas, in his in quibus hac methodo jam fuerunt excitatæ.

Tandem ad præfata confirmanda, testimonium adducitur Emanuelis Timonio profitentis artem in Graecia cum celebritate, qui tum philosophiæ, tum appollinari laurea decoratus in Clarissimis Universitatibus Oxoniensi, Patavinaque, inter Socios Regiæ Societatis Anglicanæ, ob singulare meritum fuit adscitus: hic autem attestatur in historia variolarum quæ per incisionem excitantur, publici juris facta, se millies operationem prælaudatum feliciter, et ex voto celebrasse.

Ex quibus inferendum, quod ubi morbi variolosi signa se produnt, et interaneorum inflammationes periculosæ metuuntur, incisiones hujus modi, bonis ægri rebus fieri posse, ut nempe commoti pravi seminii, seu stimuli vehementiam sola cutis excipiat.

Etenium quatenus innuimus, si tristia fata ferant, variolarum insultum cuilibet mortali semel, aut bis in vita subeundum, satius est hoc artificio benignas excitari, quam tanti momenti negotium naturæ in plurimis quidem aliis vitæ casibus, almæ parentis officio defungenti, sed in hoc frequenter, salvum novercæ præferentis habitum committere.

Idem esto judicium de febribus acutis, aut malignis phlegmonodeis, in quibus easdem incisiones ex voto succedere posse, statuere non veremur, præsertim cum utrumque genus affectuum epidemice, grassantium, interim adeo sæviat, ut inopinæ, funestæque mutationes sæpius eveniant, quæ medicos exercitatiores, attonitos veluti reddunt, dum videlicet stimulus phlegmonodeus, juxta vulgatum adagium, suppositus cineri doloso, vel quacumque de causa compressus, sic exardescit, ut subitaneo latentis inflammationis impetu, miseros jacentis e medio tollat.

Unde summa semper harum ægritudinum initio tentanda, nec secundum pravam vulgi consuetudinem lenta ferenda sunt auxilia alioquin si salus optata fortassio eveniat, verosimilius naturæ quam artis viribus adscribenda.

[But can one have recourse not merely to the many therapeutic measures that I have already referred to, but to scarifications and incisions of the integuments distant from the trunk, such as the plump skin of the limbs, since, thanks to this procedure, a slight inflammation is provoked which may withdraw all danger from the internal organs. In reality, by this salutary artifice the seed, so to speak, by the inflammatory excitation belonging to it, prepares a focus in which it can exercise its usual violence without placing life in jeopardy. Can this procedure be employed in order to bring about recovery? What makes this point somewhat obscure is that this peculiar custom is very common among oriental peoples. It consists of transmitting smallpox from a patient to a healthy man by means of a kind of graft, that is to say, inoculation. A detailed account of this transmission is to be found in the Ephemerides of the celebrated College of Treves, from which it ensues (the fact was told me at Constantinople and confirmed by reliable persons) that this operation is performed successfully by the Turks, and especially by the Circassians, Armenians and Georgians.

It is quite true that during autumn, when the violence of the fires of smallpox diminish from the dampness of the atmosphere and earth, a young male subject with a strong and healthy constitution is selected who is ill with smallpox in the phase of suppuration, the pus

being ripe and laudable, the pustules being filled with it and mature . . .

Some of these pustules are then pierced with a needle at about the twelfth or thirteenth day of the disease, that is to say, at a time when one is sure, according to ordinary observation, that the purulent matter has attained full maturity. The pus flowing from the pierced pustules should be collected in suitable receivers and heated. Then after some incisions are made in the plump skin of the arm or leg of the subject to whom the disease is to be transmitted, the pus is mixed with the blood coming from the incisions and then they (the incisions) are covered with the half shell of a walnut firmly held in place by a bandage.

The patient should be put to bed in a temperate atmosphere and all animal food forbidden for twenty-five days. On the seventh day following the inoculation, the pustules of smallpox happily develop in a discrete and satisfactory way. They soon reach maturity when they dry up and fall off without leaving cicatrices excepting at the incisions. It is also affirmed that those in whom the pustules only develop at the site of the inoculation remain free from smallpox for the remainder of their lives, although they may be in contact with smallpox cases. It is also said that a negative result ensues when inoculated subjects are re-inoculated (later in life).

Finally, to confirm what has been said, I refer to the testimony of Emmanuel Timonio, who has successfully practiced medicine in Greece and who, being illustrious in philosophy and poetry as well in the famous Universities of Oxford and Padua, has been received as a member of the Royal Society of London, on account of his eminent services. In his history of smallpox produced by graft, he states that he has successfully performed the operation a thousand times.

From these facts it may be inferred that when symptoms of smallpox develop and serious inflammation of the intestines is to be feared, these incisions can be made for the great good of the patient, in order that the skin alone shall sustain the violence of the morbid humor and the irritation set up by it . . . Every man is exposed once or twice in his life to smallpox and it is better to produce a mild smallpox by inoculation than to leave it to Nature, who, although in most instances in life she plays the part of a kind mother, prefers in the case of smallpox to be a cruel step-mother.

My opinion is the same in respect to acute fevers and malignant inflammations, because I do not hesitate to say that these processes may be successfully dealt with by incisions, all the more so since both these morbid processes are epidemic in nature and so violent that unforeseen fatal changes ensue which disturb physicians when the type of inflammation . . . becomes so ardent that from the sudden effect of a hidden inflammation it causes the patient's death.

Therefore, from the onset the essential symptoms of these diseases should be attacked, instead of using remedies slow in action as most do . . .]

It is to be noted that the first thesis for the degree of doctor of medicine upheld in Europe on inoculation was presented in 1716, at the University of Leiden, by Antoine Leduc, who was born at Constantinople.

It is also a well-known fact that inoculation had been practiced in certain parts of Europe long before the procedure had been introduced from Turkey. Dr. Schwenck found it an established practice among the people in the county of Meurs and the duchy of Cleves in 1712. Bartholinus speaks of it in a letter on "The Transplantation of Diseases," printed at Copenhagen in 1673, as being a common practice in Denmark. Some vestiges of the practice were found in some of the ancient French provinces, especially Auvergne and Perigord.

"THE BREVIARIE OF HEALTH" BY ANDREW BOORDE

By W. G. AITCHISON ROBERTSON, M.D.

EDINBURGH, SCOTLAND

IT is not difficult to discover in reading this early medical work that we have in it an example of the priest-physician, a very usual combination in the early days of medical practice.

Andrew Boorde or Borde was born at Boords Hill, near Cuckfield, in Sussex, England, about 1490, and thirty years later he was appointed suffragan bishop of Chichester. He belonged to the Carthusian order of monks and for many years lived an austere life of fasting, abstaining from all animal food. At length, however, in the year 1528, we find him writing to the prior of Hinton Charterhouse "I am nott able to byd the rugorositie off your relygyon." This brought him a dispensation, and subsequently he traveled abroad "for to have the notycyon and practes of Physyche in divers regyons and countres." He returned to England in 1530.

Having attended the Duke of Norfolk in a dangerous illness and having thus secured his favor, Boorde was "convocated to wayte on his prepotent mageste," Henry VIII. Not satisfied with his medical education and desirous to "have a trewe cognyscyon of the practes of Physyche" he visited "unyversities and scoles approbated" including Orleans, Poictiers, Toulouse and Montpellier, in France, Wittenberg in Germany and, in company with nine Englishmen and Scotchmen, he went on a pilgrimage to Rome and Compostella. On returning to England in 1534 he again submitted to the discipline of Charterhouse where he was "keppt in thrawldome" until liberated by his friend Cromwell. The latter sent him abroad on a political mission. In a letter to Cromwell, dated June 20, 1535, from Bordeaux he writes, "few frendys Ynglond hath in theys partes of Europe (Normandy, France, Gascony, Bayonne, Castille, Spain, Portugal, etc.) as Jesus, your louer knowth."

To his patron, Cromwell, he sent from Spain "the seedes off reuberbe, the whiche come owtt off Barbary. In thes partes ytt ys had for a grett tresure." In April, 1536, he wrote to Cromwell:

> I am now in Skotland, in a lytle unyversyte of study named Glasco, where I study and practyce physyk . . . for the sustentacyon off my lyuyng . . . trust yow no Skott, for they wyll yowse flatteryng wordes; and all ys falshode . . . it is naturelly geuen, or els it is of a deuellyshe dysposicion of a Scottysh man, not to love nor favour an Englishe man.

A year later he returned south but the inhabitants of London seem to have treated him as badly as the Scotch, calling him an apostate and a good-for-nothing, and otherwise slandering him.

After the dissolution of the monasteries by Henry VIII, in 1538, Boorde set out on a prolonged tour through Europe, traveling as far as Jerusalem. He remained at Montpellier for some time "the most nobilis universite of the world for phisicions and surgions; the hed universite in all Europe for the practes of physyche."

If he had not already written, it was at Montpellier he completed his "Fyrst Boke of the Introduction of knowledge," his "Dyetary," his "Breuyary of Health"[1] and his (now lost) "Boke of Berdes" (beards). The latter is known only through the publication, "Barnes in the defence of the Berde," or "The Treatise answeryinge the boke of Berdes, compyled by Colleyn Clowte, dedycated to Barnarde barber dwelling in Banbery, 1543." Boorde had evidently written in condemnation of the wearing of beards, but here he is accused of having become drunk in the house of a Dutchman, and of having vomited over his long beard so that he had to shave it off next morning because of its vile odor.

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[1] Published in 1547.

Boorde was again in London in 1542 and from here he removed to Winchester. A companion book to the Breviarie, his "Astronamye," he "dyd wrett and make this boke in IIII dayes, and wretten with one old pen with out mendyng." His later days, however, were passed under a cloud, for Dr. John Poynet, bishop of Winchester, records in 1556 that "within this right yere" it was proved before the justices that Boorde had kept three loose women in his chamber at Winchester "and the harlots openly in the stretes and great churche of Winchester were punished." On April 9, 1549, Boorde made his will in the Fleet prison in London to which he had been removed "on its being discovered that he had kept a brothel for his brother-bachelors" and where he died (it is said from poison which he had taken) on the 25th of the same month.

It is stated that Boorde was the author of several other books, but as they are no longer in existence, it is impossible to determine their authorship. In his Introduction to the "Fyrst Boke of the Introduction of Knowledge," the first printed specimen of the Gypsy language is found in his description of Egypt. He alludes to the Englishman's whimsicality in dress in these lines printed below a rude woodcut of an Englishman standing naked with a pair of scissors in one hand and a piece of cloth in the other:

I am an Englishman, and naked I stand here,
Musyng in my mynd what rayment I shal were;
For now I wyll were this, and now I wyll were that;
Now I wyl were I cannot tel what.

The full title of "The Fyrst Boke of Knowledge" runs:

The fyrst Boke of the Introduction of knowledge. The whyche dothe teache a man to speake parte of all maner of languages, and to know the usage and fashion of all maner of countreys. And for to know the moste parte of all maner of coynes of money, the whych is currant in every region. Made by Andrew Borde, of Physicke Doctor; Dedycated to the Right Honourable and gracious lady Mary, daughter of our Soverayne Lorde Kyng Henry the Eyght.

This black letter work has been reprinted in the early English Text Society's series, edited by F. J. Furnivall, M.A. and published in 1870.

The "Breviarie of Health" consists of a compendium of diseases arranged without method, though nominally the subjects are grouped under their Greek or Arabic names.

Each subject begins with a short description of the meaning and derivation of the title. This is followed by a brief account of the causes of the disease, succeeded by "a remedy" which consists mainly of an enumeration of the various drugs which may be administered. A better conception of the work may be arrived at by citing passages in it, then by endeavoring to summarize the treatise as a whole.

The Breviarie of Health; wherein doth follow, Remedies, for all maner of sicknesses and diseases, the which may be a man or woman, expressing the obscure terms of Greeke, Araby, Latin, Barbary and English, concerning Physick and Chirurgerie.

Compiled by Andrew Boord, Doctor of Phisicke; an Englishman: now newly corrected and amended, with some approved medicines that never were in print before this impression and are aptly placed in their proper chapters by men skilfull in Physicke and Chirurgerie.

Imprinted at London by Thomas Este, 1598.

The book ends:

Here endeth the first booke examined in Seforde in June the yere of our Lord 1546 and in the raigne of our Soverayne Lord King Henry the Eyght, King of England, Fraunce and Ireland the XXXVIII yere.

A part of the prologue is as follows:

A *Prologue to Phisitions* egregious doctours and maisters of the Eximious and Archane Science of physick, of your Urbanitie exasperate not your selves against mee, for making of this little volume of phisicke. Considering that my pretence is for an utilitie and a common wealth. You to be extolled and highlie to bee preferred that hath, and doth studie, practise and labour this sayde Archane Science, to the which none inarcious persons can nor shall attaine to the knowledge; yet fooles and incipient persons will enterprise to smatter and to meddle to minister medicines; a fie on such a one now a days will practise either by a bluide booke. O Lord what a great detriment is this to the noble science of physicke that ignorant persons will enterprise to meddle with the ministration of phisicke . . . A phisition must have surely his astronimy to know how, when and at what tyme everye medicine ought to bee ministered. I have now discharged my conscience in showing the truth as God knoweth, who send all manner of phisitions a true knowledge in phisicke, that they the which be sick and diseased may have a remedie.

A Propheme to Chirurgions (abbreviated). Masters of Chirurgerie ought to bee experte in their facultie, having good wittes and memorie, evermore to bee diligent and attendable about their cures and able to minister such salves and medicines as is according to the infirmity. They ought also to be wise, gentill, sober, circumspect and learned and not dronken and to promise no more than they are able to perfourme with God's helpe and not to be boisterous about his pacients but lovingly to comfort them. Also every Chirurgion ought to know the complexion of his pacient and that they be circumspect in incisions and scarifications and Flebothomy and sure in Anathomy and in no wise to let blood in any perticular place, there where the signs hath any dominion. Chirurgions must know the operation and the conjunction of the moone and in what signe the moone is in every day and to know what signes be attractive, what signes be recentive, or expulsive or digestive. They must also know the operacion of all manner of breades, of drinckes and of meates, and to have ever in a redines their instruments and their salves. In perillous causes one Chirurgion ought to consult with another and to have the counsell of a Doctour of Phisick, for ther is no man can be to sure to help a man, as God knoweth, who keepe us all. Amen.

A preamble to sicke men and to those that bee wounded, in which he inculcates patience and peace of mind and the fixing of the heart and mind in Christ's death and passion and the sufferings he endured for our sakes "And therefore let every sicke person stick as fast to Christ in his paynes and sicknes, as Christ did sticke fast to the Crosse for our sinnes and redemption. Then first let him call to him his spirituall phisitian, which is his ghostlie father, and let him make his conscience cleane and that he bee in perfect love and charity and if he have done any wrong let him make restitution if he can and let him make a formall will or testament settling everything in a dew order for the wealth of his soule. Then let the pacient provide for his body and take counsell of some expert phisitian. He must take care not to displease the phisitian or chirurgion, for if so ther is neither Lord nor Ladye can have any service or pleasure of them.

The Preface to the Readers of this booke: Gentle Readers, I have taken some paine in making this booke to doe sicke men pleasure and whole men profit. But for as much as old auncient autentike autours or doctours of Phisicke in their bookes doth write many obscure termes, giving also to many and divers infirmities, darke and hard names, difficult to understand. I have translated all such into English. There is no sicknes in man or woman from the crowne of the head to the soale of the foote but you shall finde it in this booke. As everie man now a daies is desirous to reede briefe matters, I name this booke "*The Breviarie of Health.*" If I should write all my mynde, everie bongler would practise phisicke uppon my booke. In writing this and all the other bookes, I did never looke for no reward, neyther of Lord nor of Printer, nor of no man living, nor I had never no reward, nor I will never have none as long as I doe live, God helping me, whose perpetuall and fatherly blessing lyght on us all . . . We doe kill our soules as much as doth lye in us when that wee doe breake any of his commandements or doe sin deadly, for that matter he hath provided a spiritual medicine, which is repentance and amendment of lyfe. Also wee doe kill our bodies when a man doth abreviate his lyfe by sorfeting, by dronkennesse, by peneifulnesse, by taking the pocks with women, or leprousnesse beside robbing, killing which is not Gods will that such thinges should bee done. God therefore made pension that man might bee holpen by the vertue which he did give to herbs, weedes, trees, rootes, fruites and stones. The properties of which, few men or none doth know them except Docters of phisicke. Therefore let all men beeware of vacabounds and runnagates, that will smatter with phisicke, for by such persons many sicke men have beene deceived, the more pitie, God knoweth, who helpe us all now and ever. Amen.

The following extracts will serve to demonstrate the style and character of the work:

> The first chapter doth treate upon abstinence. The second doth show of the abhoring of a mans stomach against meate or drinke and is cured by taking all oderiferous and redolent savours.

In speaking of abortion he says:

> It may come by a great frare or by extreame thought or by extreame sicknesse or death, it cometh also by a stripe or stroke or a fall. Also it may come by recepts of medicines, extreame purgacians, pocions and other laxative drinkes, of the which I dare not to speake of at this time, least any light woman shuld have knowledge by the which wilfull abborsion may come of the multitudinesse of the flowers of a woman. The remedies to be taken extend from St. John's wart to aniseed.

He treats a "wylde or running skabbe with mercury morified with fasting spettil." A "carbocle" more commonly comes "when the pestilence doth raine and is to be treated by applying doves dung and cantharides" . . .

> The 19 chapiter doth shew of burning of an harlot or of an hoare. This impediment doth come when an harlot doth hold in his breth and clasp her handes hard together and toes in lyke manner. And some harlot doth stand over a chafing dysh of coles into the which shee doth put brimstone and there shee doth perfume hirselfe. If a man be burnt with a harlot and doe meddel with another woman within a day, he shall burne the woman that hee doth meddel with all. If one bee burnt, let them wash their secrets two or three times with white wine or else with sack and water. And if the matter have continued long go to some expert Chirurgion to have helpe or else the guts will burne and fall out of the belley.

In speaking of the "Soule" of man he urges:

> Every man in this life so provide by the merit of Christes passion that soule and body being perfect man, may enter into everlasting joy and glory, to be in heaven to God. The electuary of Gems and the confection named Alchermes be good to comfort ye soule or the spirits of man, soule and body beeing together heere in earth.
>
> Chapter 55 doth shew of a canine or a dogges appetite after the stomake is evacuated or empty, then the pacient doth fall to eating againe.

For the melancholy form, he advises one "to eat fat meats, as goose, pig and to drinke good drinkes." For impotency he recommends an aromatic electuary or a confection made of the stones of a fox, and in chapter 213 he advises the use of "netles in the codpiece about the yerde and stones." For sterility:

> Let barren women use to eate in powder the matrixe of an Hare or drincke the powder of the stones of a Bore with wine and let her keepe an order in her meates and drinks and use no venerious actes after a full stomake . . .
>
> There is nothing that doth comfort the heart so much beside God, as honest myrth and good companye. And wine moderatelye taken, doeth letificate and doth comfort the hart. All sweet and dulcet thinges doeth comfort the hart as maces and ginger, rere egges.

For toothache he recommends:

> If it come by wormes; make a candell of waxe with Henbane seedes and light it, and let the perfume of the candle enter into the tooth and gape over a dish of colde water and then may you take the wormes out of the water, and kill them on your nayle and beware of pulling out any tooth for pull out one and pull out more.
>
> Chapter 109 treats of Knobbes and Burrs in the flesh—the one is hard the other is soft. It comes of corrupt fleumatike humours the which be putrified. They must be abstracted out with the instruments of Surgery and after that incarnate the place.

He discusses much more fully various fevers—ephimer, cotidian, interpolate, tertian, quartayne, sinochos, sinocha homothena, augmastica, epamastica, causon, putrified emphisode, hermitrick, epiall, lipery, tetrach, erraticke eticke, pestilence, lurden, and so forth.

Ficus in ano, or a figge because it is a postumacion like a figge and comes of a melancholy humour the which doth discend to the longacion or fundement. It is to be cured by taking of the powder of a dog's head burnt and mixe it with ye juice of Punpernell and make tentes and put into the foundement.

Speaking of Joy or Mirth, he says:

It may be in musicall instruments and ghostly and godly singing but now a dayes he is mery that hath golde and silver and ritches with lechery and all is not worth a blew poynt.

A "Gomory passion" is the name for gonorrhoea and comes "from Gomer and Sodome which cities did sink to hell sodenly for their sins."

Chapter 174 doth shew of an Infirmitie named Hereos, or love-sickenes. Young persons bee much troubled with this impediment. It doth come of amours which is a fervent love for to have carnal copulacion with the party that is loved and it cannot be obtayned; some bee so foolish that they bee vanished of their wits and women may have this sicknesse as well as men. I do advertise every person not to set to the hart that another doth set at the heele and muse not but use myrth and mery company and bee wise and not foolish.

For shingles he recommends a plaster "made of the red wormes the which doe come out of the earth."

Chapter 183 doth shew of standing up of a mans hayre or horripilacio. It may come of foolish feare when a man is by himselfe alone and is afraid of a spirit of the buttry which bee perillous beastes. Let every man trust in God and what can any evill spirit or divell doe any man harme with out his will. And if it bee my Lord Gods will, I would all the divels of hell did teare my flesh all to peeces, for Gods will is my will in all thinges.

He notes that the "French pockes did come but lately into Spain and Fraunce and so to us about the yeere of our Lord 1470." For madness or mania he advises:

The patient be kept in a chamber void of all pictures but redolent of sweet savours and that he bee kept from musing and studiing and use myrth and mery communication and use the patient so that he doe not hurt himself nor no other man and he must bee kept in feare of one man or an other and if neede require he must be punished and beaten.

A person who is "gogill-eied" [who squints] must beware what is put into the eye except it bee cold unlesse it bee womans milke and the blood of a Dove.

"Piping in the eare" comes of ventositie or winde which is in the head and in the eares and cannot get out.

For satyriasis he recommends leaping into a great vessel full of cold water, and the application of nettles to the offending part.

Heere endeth the first booke, examined in Oxforde in June the yere of our Lord 1546 and in the raigne of our soveraijne Lord Henry the Eyght, King of England, Fraunce and Ireland the XXXVIII yeare.

THE SEGUINS OF NEW YORK

THEIR CAREERS AND CONTRIBUTIONS TO SCIENCE AND EDUCATION

By CHARLES L. DANA, M.D.

NEW YORK, N. Y.

THE fiftieth anniversary of the American Neurological Association is devoting some of its time to a study of the history of neurology in the United States. In view of this fact, it seemed to me very much worthwhile to have attention called to the career and the contributions of the two Seguins, father and son, Dr. Edouard and Dr. Edward C.

My plan is to give a short sketch of the life of each one and add to it some comments upon his personality and the work which he did and the contributions to science and education which he made.

Dr. Edward C. Seguin was born in Paris in 1843. He died in New York, February 19, 1898. He came with his father to the United States in 1850 and lived for a time in Ohio. The family moved to Mount Vernon in 1860 and to New York City in 1863 where he graduated in medicine in 1864. Edward C. Seguin was in the Army from 1862 to August, 1864, as acting surgeon. From 1865 to 1867 he was interne in New York Hospital. He then developed pulmonary tuberculosis and went to New Mexico as surgeon in the Army. In about a year he returned to New York cured. He studied medicine in Paris in 1869–70 and returned to New York in 1871 where he became associated with Dr. W. H. Draper for five years. He lectured at the College of Physicians and Surgeons on neurology from 1871 (age twenty-eight) to 1885, a period of fourteen years. During this time he established a clinic for nervous diseases and later a department of nervous diseases in the Medical College, and this was the first one ever established in this country. He was one of the founders of the American Neurological Association, its secretary for several years, and later its president. He was also one of the founders of the New York Neurological Society, first organized in 1878.

He was a very careful clinician and contributed systematically to medical literature on the subjects of therapeutics, neurological pathology and localization. He was one of the first, if not the first, to teach the value of very large doses of the iodides and of aconite, hyoscine and nux vomica. In general he advocated the practice of getting values out of the drugs he used. At the same time he claimed that he was the first to give hypodermics of water for pain.

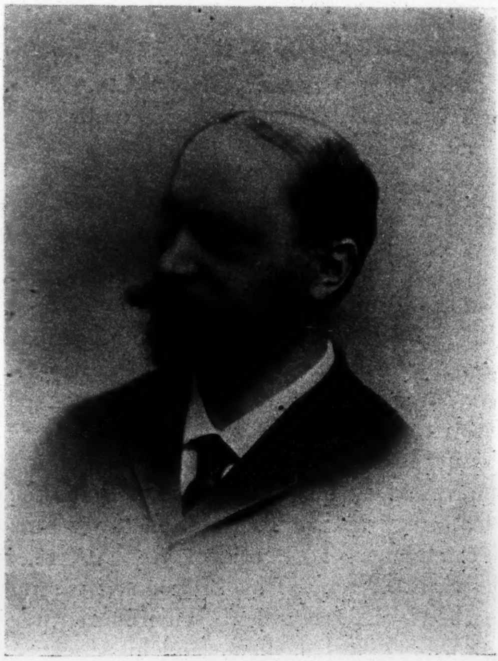

FIG. 1. EDWARD C. SEGUIN (1843–1898).

He was a strong believer in the fact that neurology was a part of internal medicine, and he was the founder of a journal called *Archives of Medicine* which he conducted for several years. He was very active in the New York Neurological Society and the American Neurological Association.

I have spoken of the methods and difficulties on the part of professional men of breaking into New York. Dr. E. C. Seguin was not a New Yorker by birth or residence. He was not even a college graduate. Nevertheless he very early achieved a position in his profession in this city, and even obtained a place in the highly select ranks of the College of Physicians and Surgeons at the age of twenty-eight. To do this he must have had substantial attainments combined with a decorous sobriety of conduct and expression.

It happened that in this period of New York's medical history, many of the really brilliant and original masters in medicine were outside the ranks of the group which controlled the College of Physicians and Surgeons. There were, for example, such men as Drs. "Jimmy" Wood, Sayre, Janeway, the Flints, Sr. and Jr., Hammond and Beard. Seguin's success therefore may be thought by some rather presumptive that he was not a man of the very highest rank mentally, and this is probably a correct estimate.

But he made a very deep and definite impression on me, and he was perhaps the most important and useful factor in the development of neurology at that time. This was because of his precise and careful methods, of his thoroughly scientific attitude towards clinical medicine and his sincerity and honesty in connection with his patients and his work. At that time the spirit of minute and penetrating observation was not very dominant. The American doctor treated his patient as a human being and tried to help him, but his technical knowledge was rather vague and laboratory knowledge did not exist. To me the wonderfully painstaking methods and acute and careful observations of Janeway stood out as the most stimulating and helpful experience of my early professional life. And I felt that Seguin approached neurology in the same spirit if not with the same genius. Seguin was a thorough and careful clinician, partly, perhaps, because he was by habit a man of precision.

Happily this intense interest in clinical work was not inspired, as is often the case, mainly by a desire to make a diagnosis. Seguin was equally interested in trying to cure and help his patient. Much of his most important and original work was in the line of therapeutics.

And although Seguin had no unusual personal qualities, being hardly of the class of "good mixers," or of the type that wins patients by social qualities, yet he had a very large following of patients, and they were most devoted to him and most convinced believers in his resources and skill.

Even after his family tragedy, his withdrawal from his college work, his residence for a year in Providence, Rhode Island, patients followed him and, coming once a week to New York, he always had a packed waiting room. This fact was well known and it made a special impression on me. There was something in Seguin's personal interest and methods and skill that filled his office. And it was not due to any public exploitation or any meretricious methods. I have often said to young medical men that if they wanted to be really successful, they should study the life of E. C. Seguin.

Dr. Edouard Seguin I never knew personally, but I have always been familiar with his work; I knew in what esteem he was held by workers in the education of mental defectives, and of the special work which he had started in this country. Mrs. Seguin, his widow, who has been carrying on this work since her husband's death, was good enough to call on me and bring some special and early estimates of his career, as well as some material bearing on his character and personality.

I wished to be assured that my personal estimate of Dr. Edouard Seguin was that of present-day specialists, and in response to my inquiry, Dr. Walter E. Fernald sent me the following letter:

Dear Dr. Dana:

I have received your letter of May 21st, in regard to Edouard Seguin.

The complete list of his articles as I have them is enclosed. His treatise of 1846 is a classic. He was a remarkable man. He anticipated modern psychiatry, modern psychology and modern pedagogy in a remarkable way so that today his treatise on Idiocy is the best guide for the understanding and training of the types of defect which were recognized in his day. His work profoundly affected general pedagogy. The work of Montessori was entirely based upon Seguin's principles. The newer work of Decroly of Belgium is likewise very largely an elaboration of the principles formulated by him. His methods are not out of date, and he deserves all the praise which has been given him.

I regret very much that I do not have the pleasure of seeing you as frequently as I used to some years ago. I wish you might come to Waverly sometime.

Very truly yours,
Walter E. Fernald.
Supt.

P. S.—The article on Seguin by H. Holman, published by Sir Isaac Pitman & Son, London, is a very discriminating one.

Dr. Edouard Seguin was born at Clamecy, France, January 20, 1812. He was educated at the College of Auxerre and St. Louis, Paris. He studied with Itard and later worked with Esquirol. In 1839 he opened a school for idiots, in which he applied his new and original views as to the education of mental defectives. Dr. Seguin believed that among these, the brain was often not diseased or abnormal but only arrested.

This first institution and its methods of education were formally approved by the Académie des Sciences in 1844. It became the parent of the seventy-five or more institutions established since then. Dr. Seguin lived in Paris for the next ten years and was a familiar figure among the intellectuals of that time. He was extremely well endowed mentally and educationally, and had wide human interests. He was, perhaps, socialistically inclined and though not an atheist he did not believe in formal religion. When Louis Napoleon became Emperor, Seguin decided to go to the United States. He did so in 1848. He at once got in touch with men like Wilbur and others who were interested in the institutional care of the idiot and was of great help in reorganizing the methods of teaching. He first lived, for seven or eight years, in Ohio; but often visited other places in his work. He went to Syracuse in 1858, then to Mount Vernon in 1860 and a little later to New York (1863) where he was a factor in organizing the School for Defectives at Randall's Island.

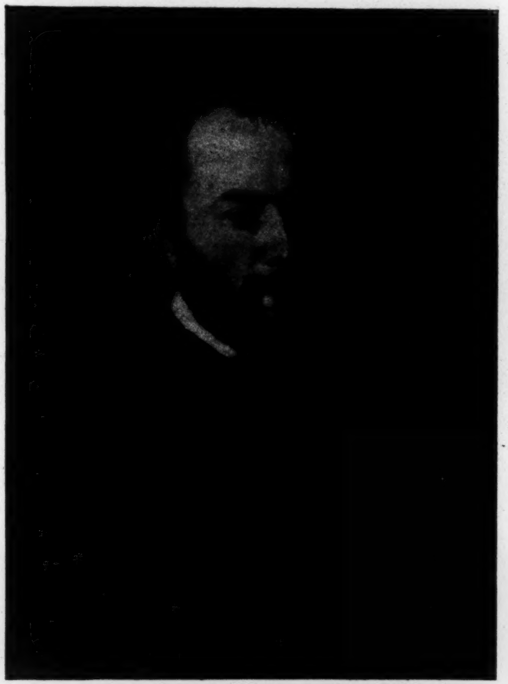

FIG. 2. EDOUARD SEGUIN (1812–1880).

In 1873 he represented the United States at Vienna as commissioner of education in the matter of the organization of asylums for the blind, deaf, idiotic, aged and infirm, and so forth.

He took a degree in medicine at the University Medical College of New York in 1861 and became a member of the American Medical Association in 1862.

From 1839 to 1870 Dr. Seguin's medical interests were concentrated on the subject of the nature and methods of educating the mentally defective.

About 1870 he became interested in medical thermometry and in the metric system, or more especially in trying to get a uniform system of vital records among physicians.

He had been a widower for several years and in 1880 he married one of his pupil teachers who had been carrying out the new educational methods under his direction. He died a few months later, October 28, 1880.

After his death, a memorial service was held at which remarks were made by Dr. L. P. Brockett, of Brooklyn, Dr. H. B. Wilbur of Syracuse, Dr. George Brown of Barre, Massachusetts, and Dr. L. Marion Sims of New York. These men paid tribute to his lovable character, to his intellectual attainments and his especial achievements in the matter of mental defectives.

Dr. Seguin was a prolific writer as his bibliography, kindly sent to me by Dr. Fernald, shows; but his early and greatest work was his "Treatise on the Moral, Hygienic and Educational Treatment of Idiots," published in 1846.

It is difficult for me to give an adequate estimate of the character of Dr. Seguin. I am sure that he was very near to being a genius. He not only devised a new and successful method of education and treatment of a class previously neglected but he had the intelligence to work out its practical details, developing and carrying out his system so logically and effectively that it quickly won world-wide acceptance. He knew psychology and philosophy inerrantly as related to his special work. Aside from this he was a man well educated in literature and languages; he knew his classics well. He was fond of poetry and wrote good verse himself. He was fond of art and especially of painting. The portrait we reproduce is from an excellent oil painting that belonged to him. He was very modest and retiring personally, very eager always to help others, and most generous and unsparing of self. He seemed always to be searching for ways to help his fellow-man. These attractive personal qualities were told me by his widow and are confirmed by writers who knew him well.

Edouard Seguin was born a Frenchman, but he became an American, and America nourished him and gave him a field for his work. So I think that a record of his life and achievements belongs to our neurological and psychiatrical history today.

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EDITORIAL

MEDICAL ASPECTS OF SAMUEL JOHNSON

Sir Humphry Rolleston,[1] in an address before the Royal Medico-Chirurgical Society of Glasgow, has summed up in his usual delightful manner the interesting facts to be found in relation to the great lexicographer. He opens his address with a reproduction from the original manuscript of the report of the autopsy on Johnson's body. The report was written by James Wilson who was successively Cruikshank's pupil, assistant and partner. Dr. Cruikshank attended Johnson in his last illness and asked Wilson to do "the dissection" for him. The manuscript descended from James Wilson to his great-grandson Lee Dickinson, by whom it was presented to the Royal College of Physicians of London in 1903. The report of the autopsy is of so great interest that we reprint it in full.

Wednesday, December 15th, 1784, opened the body of Dr. Samuel Johnson for Mr. Cruikshank, in the presence of Drs. Heberden, Brocklesby, Butter, Mr. C. & Mr. White. He died on Monday evening preceding. About a week before his death Mr. C., by desire of his physicians, scarified his legs and scrotum, to let out the water which collected in the cellular membrane of those parts, Dr. Johnson being very impatient to have the waters entirely gone. On the morning of the day on which he died he repeated the operation himself and, cutting very deep, lost about ten ounces of blood; he used a lancet for this purpose; he was in too weak a state to survive such an apparently trifling loss. For several years past he had been troubled with asthma, for which he commonly used to take opium, and found that nothing else was of any service to him; he had discontinued, however, this practice some years before he died.

On opening into the cavity of the chest, the lungs did not collapse as they usually do when air is admitted, but remained distended as if they had lost the power of contraction; the air-cells on the surface of the lungs were also very much enlarged; the right lobe adhered very strongly to the diaphragm; the internal surface of the trachea was somewhat inflamed; no water was found in the cavity of the thorax. The heart was exceedingly large and strong, the valves of the aorta were beginning to ossify; no more fluid than was common was contained in the pericardium. In the abdomen seemed to be incipient peritoneal inflammation and ascites; the liver and spleen were firm and hard; the spleen had almost the feel of cartilage. A gall-stone about the size of a pigeon's egg was taken out of the gall-bladder; the omentum was exceedingly fat, nothing remarkable was found in the stomach; the folds of the jejunum adhered in several places to one another; there was also a strong adhesion by a long slip between the colon and bladder; the pancreas was remarkably enlarged; the kidney of the left side tolerably good, some hydatids beginning to form on its surface; that of the right side was almost entirely destroyed, and two large hydatids formed in its place. Dr. Johnson never complained of any pain in this part; the left testicle was perfectly sound in structure, but had also a number of hydatids on its surface, containing a fatty gelatinous fluid, the right testicle had hydatids likewise, but the spermatic vein belonging to it was exceedingly enlarged and varicose. The cranium was not opened.

Sir Humphry Rolleston gives an analysis of the report and concludes that Johnson had suffered from long-standing high blood-pressure with subsequent renal disease (chronic interstitial nephritis), the kidneys showing an excessive degree of cystic change. All readers of Boswell will recall that Johnson suffered from asthma and also from dyspepsia. The latter may have been due to the peritoneal adhesions to the gallstone, or to both. Sir Frederick Treves thought his ill-health was largely due to his erratic habits in taking food and his excessive tea-drinking. He also believed that Johnson's impaired eyesight was the result of corneal leucomas due to tuberculous keratitis. Rolleston suggests that in addition to leucoma Johnson probably had a myopia and that with the onset of presbyopia this was mitigated, for he claimed that in 1756, when he was forty-seven years old, his eyesight was restored to him. Johnson also had somewhat deficient hearing.

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[1] *Glasgow Med. J.*, 1924, CI, 173–191.

Rolleston does not consider it at all probable that Johnson suffered from syphilis, a suggestion that had been made to him, nor that he suffered from an endocrine gland disturbance.

Johnson was one of the last persons touched for the King's Evil by a sovereign of England. He was touched by Queen Anne in 1712, but without effect. It had been suggested that the convulsive movement and gestures which are so frequently referred to by Boswell and others of those who knew him were due to chorea, but Rolleston rightly thinks that they were probably merely a habit spasm or physical tic.

To Johnson's attacks of melancholy and somewhat morbid fear of death Rolleston attaches no importance.

The attack of aphasia which Johnson suffered in 1783, Rolleston thinks was probably of uremic origin.

Rolleston concludes his most interesting address by a brief résumé of Johnson's views on physicians and on medicine. His article should be regarded as a model by those who in the future may wish to write personal medical studies of a similar nature. It is not a mere compilation of facts but a careful study and analysis showing its author's usual originality.

THE MEDICAL SERVICE OF ARMIES IN PAST CAMPAIGNS

The recent war has aroused the interest of the medical profession in the history of the medical service of armies in past campaigns. Scattered through the numberless histories and memoirs bearing on the Napoleonic wars there are many interesting references to the medical service, but aside from the memoirs of Larrey and Percy and the writings of Guthrie there is but little authoritative information available outside of that which is buried in the official military records. Col. H. A. L. Howell, C. M. G., R. A. M. C. (retired), has recently published[1] a very interesting study of the "British Medical Arrangements during the Waterloo Campaign." In 1815 the medical services of the British Army consisted of (1) an Army Medical Department, (2) an Ordnance Medical Department, and (3) a separate establishment for the Household Troops. The Army Medical Department was originally controlled by a medical board but as this system had proved a failure, in 1810 a director-general was appointed with two principal inspectors to assist him. Only three days before Waterloo, Sir James McGrigor had been appointed to the onerous position of director-general with but one assistant, Sir William Franklin. McGrigor had but little to do with any of the medical arrangements at Waterloo until the battle was over:

> The general hospitals, of which there were only five or six in England, were run by a separate medical establishment, consisting of physicians, staff, surgeons, hospital assistants, purveyors, deputy purveyors, apothecaries, hospital mates and dispensers. All were commissioned officers, except the mates and dispensers. *Purveyors* and *deputy-purveyors* had charge of the provisioning of the hospitals and kept the hospital accounts. Originally, they were better paid than staff- and regimental-surgeons and were selected from their ranks

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[1] *Proc. Roy. Soc. Med.*, Lond., Section of the History of Medicine, May, 1924.

but at the time of Waterloo they were no longer medical officers, but appointed from persons versed in accounts.

Hospital assistants were junior physicians and surgeons in the hospitals. They had formerly been called hospital mates for general service and were commissioned. Another class of hospital mates still existed at the time of Waterloo, but these were warrant officers only and may be regarded as probationary medical officers expected "to improve themselves towards a due qualification for admission as commissioned officers" (War Office Circular). Later on, hospital assistants were designated staff assistant surgeons and hospital mates. Many were promoted to the rank of physician. They appear to have acted chiefly as clinical clerks to the physicians. *Staff surgeons* were surgeons not belonging to regiments, who were employed on the staff of a general in the field, or in a hospital, or in garrison. They were usually promoted from the ranks of hospital assistant, apothecary and regimental surgeon. Physicians were the elite of the medical profession in the army. They were required to hold either an Oxford or Cambridge degree and to be Licentiates or Fellows of the London College of Physicians. Later, the degrees of any university in Great Britain or Ireland were acknowledged as qualifications. For a long time most of the physicians were appointed directly from the ranks of the civilian medical profession. As they were better paid than regimental and staff surgeons, who had difficulty in attaining the rank, much discontent arose. In 1811, it was directed that physicians were to be chosen from regimental and staff surgeons who possessed university degrees.

Officers of hospitals were designated as "to the forces," thus, "physician to the forces," "surgeon to the forces," "hospital assistant to the forces," "apothecary to the forces." This arose from the fact that they were originally appointed to forces in the field. When the war was over they were placed on half-pay, being called up again, if required, when a fresh war broke out.

The regimental medical personnel was distinct from the medical staff. At Waterloo most battalions of infantry and each cavalry regiment had a surgeon and two assistant surgeons. Howell directs attention to the fact that medical officers at this time held only relative rank and had no disciplinary powers over either the hospital attendants or the patients. During battle the regimental surgeon and one assistant surgeon went into action with the regiment, applied first-aid to the wounded and superintended their removal. The second assistant surgeons joined the senior surgeon of the brigade or a staff surgeon in the establishment of a collecting or dressing station for the wounded, or a field hospital. The artillery had a distinct medical organization under the master-general of the ordnance. At Waterloo the ordnance medical department was represented by four surgeons, three assistant surgeons, and ten second assistant surgeons. There was likewise a separate medical establishment for the Household Troops. The senior surgeon of each regiment of Foot Guards was given the title of surgeon-major and the other surgeons were called battalion surgeons. The principal medical officer in the Waterloo campaign was Sir James Grant. Colonel Howell describes the staff organization which he had under him. The British army had no ambulance system such as that introduced into the French service by Larrey and Percy, with vehicles to carry the wounded and an organized corps of stretcher-bearers. If a British soldier was wounded his comrades removed him to the rear or if this could not be done he lay where he fell until the action was over. It is estimated that at one period of the battle of Waterloo 10,000 men were absent, having gone to the rear with wounded. After they had been carried back they were transported to hospitals in return carts of the commissariat, in hired carts, or in spring waggons. The latter were under the charge of the Royal Waggon Train. There were supposed to be two spring waggons attached to each corps. The waggons were drawn by four horses, could carry only two wounded lying down and seven or eight sitting up, and were very heavy and so broad that they blocked the roads. Each regimental and staff surgeon was allowed a horse or mule with a pair of field panniers and a packsaddle for the carriage of his field medical stores.

Colonel Howell summarizes the statistics of the forces in action and the casualties on both sides.

A number of days elasped before all the wounded could be picked up on the field of battle. Hospitals were opened in Brussels and Antwerp where the sick and wounded were kept until they could be sent back to England. It is interesting to recall to Americans that William Gibson, professor of surgery in the University of Pennsylvania, was present at the battle of Waterloo and received a slight wound from a stray shot. He describes his experiences in his book "Rambles in Europe."

MEDICAL ADVICE OF HENRICUS ALMANUS DE SUONISHAIN

In an inaugural dissertation from Sudhoff's Institute for the History of Medicine at Leipsic (1924), Walter Brand presents "Ein arztlicher Ratschlag des Magister Heinrich, genannt Thopping von Sinsheim, für den an der Gicht leidenden Papst, Innozenz VI." Henricus Almanus de Suonishain, having apparently been able to relieve his sacrosanct master from a troublesome gout from which the latter had suffered for over two years, wished to tell the world how it was done. He begins with the sound statement: "Triplex est instrumentum medici, dieta, potio, cirurgia," and expatiates at length on the details of the first two. The dietary divisions into gross, viscous, terrestrial, dry, acruminous and acetous, however, are hardly of value today; and still less so the shotgun prescriptions he advocated for this "pestiferous disease." Careful directions are given for the preparation of a prescription of thirty-one ingredients to be followed ten days later by another of twenty-nine and a smaller one of eight for "evacuating the offending material." Recipes for plasters, ointments and so forth follow in the same vein.

CORRESPONDENCE

To the Editor:

The name of Mr. William Hickey is not to be found in the "Dictionary of National Biography," but if the succeeding supplements ignore him, the omission will be regrettable, for of all the writers of readable memoirs he certainly deserves a place in the first rank. No other writer describing his personal experiences during the Georgian era presents such a lively, spirited description of the life of the time.

Hickey was born in 1749 and lived a long, adventurous life; working, traveling, loving, wining and dining. A man of great personal charm, numbering among his friends many prominent people, he was enabled to write of the life of the better classes. He was a great traveler and his accounts of the long months at sea should be placed in the hands of all present-day travelers who are discontented by delays. Naturally on such long voyages it was only a question of time until scurvy was encountered, and what Hickey has to say is worth reading.

Man is in the main slow to take advantage of his knowledge of disease and when he does take notice it is apt to be in a more or less hysterical way, as is well known to all interested in medicine and its history. Scurvy was well known very early; Hippocrates is credited with a reference to it. It seems certain that it was this disease which smote the army of St. Louis when his crusaders stood before Damietta in 1249, judging from the account of Jacques de Vitry. Joinville in his "Histoire de Saint Louis" tells how it ravaged the army of Louis IX at the Siege of Cairo. The earliest account of the disease aboard ship is supposed to be in the "Narrative of the Voyage of Vasco de Gama Round the Cape in the Year 1497." He lost about 100 out of 160 men. Jacques Cartier's crew suffered with it in Canada and was cured with a decoction of pine needles. Almost endless accounts could be added to show that the disease was well known at an early period.

Now as to cure and prevention. Bachstrom, writing in 1734 of the epidemic of Thorn in 1703, was probably the first to ascribe scurvy to a lack of fresh vegetables. Kramer in his "Medicina Castrensis," 1735, made the same observation on cases among the soldiers in Hungary, but the most striking contribution was the "Treatise on the Scurvy" by James Lind in 1754. He showed clearly both prevention and cure but it was not until 1795 that Sir Gilbert Blaine was able to introduce dietary reforms in the British Navy and not until 1865 that the British Board of Trade made the use of "lime juice" compulsory in the mercantile marine.

The epidemic described so vividly by Hickey occurred on a voyage home from India on the Nassau in 1779. It was in this and the following decade that scurvy took such a heavy toll both in the navy and the mercantile marine.

Hickey's account is as follows:

> After being at sea three weeks many of the crew were so seriously attacked by the scurvy as to be rendered incapable of doing duty, our distress being magnified by the weather becoming very boisterous off the south end of Madagascar. We, however, proceeded until the 15th of January, at which time being in the latitude of thirty-nine and a half south in order to avoid the enemy's ships, a tremendous gale came on from the west-north-west, as adverse a wind as could blow. The ship was laid to under a balance mizzen, tumbling about dreadfully. In three days we lost six of the hands from the scurvy, all of whom died suddenly, three of them dropping to rise no more whilst at the helm. Within the following twelve days our loss amounted to thirty-three, when we began

really and truly to think we never should reach St. Helena or any port.

Captain Gore, terrified beyond measure at the forlorn state we were in, carried his weakness so far that at last he would not receive the sick list from the Doctor, also forbidding any tolling of the bell, as was customary, previous to performing the funeral service upon a corpse being committed to the deep. He shut himself up in his cabin, from which he never stirred except to attend at meals.

In the height of the bad weather, it becoming necessary to hand the fore-topsail (then close-reefed), the few men we had were so reduced and debilitated by illness that they remained two hours upon the yard in fruitless exertions and endeavours to do the duty they had been sent upon. This so enraged Jerry Griffin, the boatswain, that after a volley of the most blasphemous oaths, he dropped upon his knees, raising his hands as if in an act of devotion, and prayed to the Almighty that there might not be enough left living in the ship to bury the dead. Soon after uttering this impious and horrid wish, he observed the poor creatures upon the yard were likely to succeed in furling the sail. He in the instant clapped his hands, exultingly crying out to the men aloft, "That's right, that's right. Well done, messmates, well done, my lads."

The following morning Colonel Flint was talking to an invalid soldier whom he had often seen when serving with the army. As this man appeared to be free from scurvy, the Colonel congratulated him upon preserving his health amidst such general and fatal disease, asking if he had used any particular means to avoid infection, when the fellow bluntly replied, "Grog, your honour, grog is your only. I'll be damned if scurvy or any other malady ever hurts me while I have plenty of grog, which possesses more virtues than all the contents of the Doctor's medicine chest." During the conversation we were summoned to dinner, and accordingly went into the cuddy where we were scarcely seated ere the Doctor was called out, but as that occurred daily nothing was said by any present. In a few minutes he returned, and to our inexpressible surprise and horror, announced that the man whom Colonel Flint had just before been talking with was dead. A shocking exit this . . .

A fine active lad about eighteen years of age, a midshipman, whose name was Smith, was amongst the earliest of those attacked by the scurvy. Being blessed with fine spirits and an uncommon share of fortitude he resisted the fatal malady in an extraordinary manner, declaring he would not yield, but would do his duty as long as he could stand. He kept his resolution nor left the deck until he dropped, as was supposed, dead. Being conveyed to his cot and medicine being administered, he rallied, though not sufficiently to be able to go upon deck again. We all felt extremely interested in this young man. The Doctor's attentions, too, were unremitting. One symptom of the disorder was an extraordinary listlessness and disinclination to move. Being urged to exert himself, he repeatedly jumped out of his cot, but had not strength enough to support himself and generally fainted. Every comfort the ship afforded was given to him.

We had now only sixteen men who could do any duty on the ship's crew. Mr. Larkins therefore considered it high time to take some decisive step, and having spoken to Captain Gore privately without effect, he after dinner on the 30th of January addressed him before us all, described the desperate state the ship was reduced to, being worked entirely by the French, no officer but himself and the fifth able to appear upon deck, the fresh provisions entirely exhausted, and only water for three weeks left; that under such circumstances they ought to make for the nearest port at all risks.

Captain Gore, terrified at Larkins' speech, asked what he would advise, when Larkins instantly replied, "Make for the Cape as fast as possible." Captain Gore then directed him to speak the Southampton and say our situation having become desperate we must run for a port. Going as close as the sea would allow to our companion, the communication was made, when Captain Lenox said he thought it absolutely necessary for the preservation of both ships that we should go into the Cape. We accordingly stood direct for the land. The moment this measure was determined on, we went to inform the poor invalid Smith, who lay gasping in his cot, his death being expected every hour. He seemed much gratified by the intelligence, observing in a languid tone that could he hold out to get a mouthful of fruit he was sure he should survive.

The 1st of February, 1780, we struck soundings upon the bank off Cape Lagullas, early the next morning saw the land, and as it was then blowing very strong direct on shore the two Commanders determined to make for False Bay instead of rounding the Cape, as the most likely way to avoid any French cruisers. We accordingly (certainly at considerable risk) went close in under the land, running along shore until four in the afternoon of the 2nd, at which hour we opened False Bay, stood directly in, and at six both ships came to an anchor. Our invalid, Smith, after we made the land, enquired every quarter of an hour with extreme earnestness when we should get in. About noon of the 2nd he gave up all hopes, lay in the most melancholy state, uttering but, "Oh, fruit, fruit, or I die." Soon after we anchored, a boat from the shore brought off a variety of fruits, vegetables, and refreshments. Everybody ran with the utmost anxiety to Smith's cot with fruit of all sorts. The Doctor held a bunch of grapes to him, which the poor fellow (then speechless and entirely exhausted) by an effort raised to his lips, and with a deep groan expired! His death was sincerely lamented by all on board.

JOHN RUHRÄH, M.D.
Baltimore, Md.

BOOK REVIEWS

Taking the Literary Pulse. By Joseph Collins, New York. George H. Doran Company, 1924.

It is impossible to refrain from comparison between this work and the preceding one by Dr. Collins, "The Doctor Looks at Literature." Much of the matter dealt with in the previous book was distinctly unpleasant and morbid. After reading the criticisms given there, it is reasonable to say that very few persons were tempted to read the works of fiction which were discussed. There is something, although fortunately much less, of the same spirit in this work and the topics cover a wider range. To review what is essentially a series of reviews is difficult but there are chapters in this work which are of especial interest to the profession. With much of the literature discussed by Dr. Collins the writer is unacquainted; some may question whether this should be to his credit or not. Certainly the discussion of some of the books does not tempt one to a closer knowledge than that given by a review. There will always be abnormal personalities and it is not surprising that there are books dealing with them. But no one wishes to associate with such persons in constant companionship nor does one wish to devote his attention particularly to their consideration in books, unless, like Dr. Collins, he is studying the state of health or disease of literature. In medicine there are unpleasant examinations to make, which when necessary are done without thought of the aesthetic aspect. But they are not done from choice. This does not lessen the interest in reading the studies which Dr. Collins has made. The comments of a psychologist and psychiatrist are illuminating but one wonders sometimes if the authors under discussion possessed the subtle intentions which are attributed to them. To the reviewer it seems that many more of the novels discussed throughout the book might have been put in the chapter entitled "Unpleasant Novels."

Although the book deals largely with literature in the form of the novel yet other literary forms are given consideration. Mention should be made of the sympathetic and interesting study of Miss Agnes Repplier. Miss Amy Lowell is a second who is discussed under the heading, "The Big Four of American Women Writers."

For the physician there are several chapters of special interest: "Heredity in Fictional Literature," "Psychological Novels," "Doctors as Men of Letters," and "Lunatics of Literature." The physician in literature is of special interest to the profession, and to many of us there are names in the chapter which will come as a surprise. It must be confessed that many of them did little in the physic line and their names are known rather for their literary ability than for their medical fame. The writer of the future will have to add the name of Joseph Collins to the list.

There are many apt sayings which catch the attention and are worth remembering, comments which would delight the students at a clinic when aptly quoted. We agree with the author when he says: "What is needed in fiction is the study of individuals who spin the wheel of progress and not the record, frequently autobiographical, of those who spoke that wheel." May we hope that in his next work Dr. Collins will deal more with such literature, for the parts in this book which seem most worth while are not concerned with the influence of the secretion of the ductless gland "that habitually overworks in fiction." Doubtless the student of the future who is engaged in an estimate of the present literary period, say one hundred years hence, will find these works of Dr. Collins an immense aid to his understanding of the "fictional psychology" of today.

Thomas McCrae, m.d.

Über den Ursprung der Syphilis. Quellengeschichtliche Untersuchungen. Von Gaston Vorberg. Stuttgart, Julius Puttmann, 1924.

In his course of lectures on medical history at the University College Medical School, Dr. Charles Singer opens his talk on syphilis with a sentence on its traditional origin in America and so forth, and then proceeds to demonstrate the inaccuracy of every item in the indictment. Apparently there is no valid evidence that the sailors of Columbus brought syphilis from the New World, or that the Spaniards carried it to Naples, or that the army of Charles VIII developed an epidemic of syphilis there and spread it throughout Europe, or even besieged Naples at all. In much the same but more detailed manner, Vorberg assails the "Sailors of Columbus" theory, and especially the arguments of Iwan Bloch, its latest exponent; but goes farther than Singer in accepting the neolithic evidence of the existence of bone syphilis in prehistoric Europe. He further points out that in spite of the extensive anthropological studies of Hrdlicka and others, the existence of pre-Columbian syphilis in the New World has yet to be demonstrated. Four fine plates of an osteomyelitic humerus and ulna found in neolithic deposits on the little Morin are believed by Vorberg to be syphilitic on account of the character of the bony change, absence of sequestra, pus sinuses, regenerative inflammatory processes and so forth. In the absence of histological proof, however, it is not impossible that these, like other early bone lesions that have been described, might well be due to rickets or some nonspecific osteomyelitis. On even more slender evidence, the well-known flat nose of Socrates is presented as a luetic saddle-nose and Augustus Caesar (because his mother had pigmented spots, forsooth, and he, in addition to spots, had bad teeth, a weakness of the left side and certain neuroasthenic symptoms) suggests congenital syphilis to the author, although judiciously "an unassailable proof is last to be offered."

Destructive criticism of the evidence of the American origin of the disease is more logically and impartially presented with a correspondingly happier result. The development of the West Indies syphilis legend a quarter century after the discovery of those islands, coincidentally with the spread of the use of guaiac as a therapeutic agent, finds a natural explanation with Oviedo, "because God is so merciful that whenever he permits an evil as a punishment for our sins, he also creates a means for combatting it." The intrinsic weakness in the evidence of the two most important witnesses, Oviedo and De Isla, is pointed out, and from the latter's own work is quoted the Spanish housewife's curses of the year of 1483 and earlier: "May you die from the evil buboes! May the evil buboes eat your eyes out!" This of course might refer to leprosy, the medieval disease which syphilis was so often confused with, but it is not likely. De Isla's imagination also bears witness to the virulence of the disease at that time: The wash-water from the clothing of syphilitics having been poured over the vegetable garden, even the cabbages produce pustules.

After a detailed presentation of the pertinent passages from Italian, French and German chroniclers and commentators, Vorberg concludes that (1) Syphilis was endemic in Europe before the discovery of America; (2) Osteological predictions of a terrible plague that was to oppress Europe at the end of the fifteenth century focussed attention on a condition that had previously existed almost unnoticed; (3) The contention that syphilis was brought from the West Indies is untenable; (4) We know neither the age nor the country of origin of syphilis; (5) Ancient medicine did not know syphilis as a specific constitutional disease; (6) It is uncertain whether the condylomata, mentagra, bone pains and so forth were manifestations of syphilis or not. Finding the book most readable and agreeing with these conclusions, the receiver heartily recommends it to those interested in the subject.

E. B. KRUMBHAAR, M.D.

ESSAYS ON THE EVOLUTION OF MAN. By G. Elliot Smith, M.A., M.D., Litt. D., D. Sc., F.R.C.P., F. R. S. 158 pp. and 19 illustrations, New York, Oxford University Press, 1924.

Those of our readers who were fortunate enough to hear Professor Elliot Smith on his lecture tour in the United States last spring will need but little introduction to this book. Representing three addresses made to the British Association, the British Academy and the Royal Institution during the past eight years, it contains substantially an elaboration of the matter given in his American lectures.

In the first chapter, "The Evolution of Man," man's pedigree from the remote shrew-like mammal of the cretaceous period is presented together with a discussion of "the factors that were responsible for the emergence of the distinctive characters of man." Professor Smith's view is that the first important step was the adoption of arboreal life with the consequent enormous development of the visual cortex at the expense of the olfactory parts of the brain. With the greater need for precise movements and use of the other senses, this not only developed the motor area but evolved the great prefrontal area "concerned with attention and the general orderly co-ordination of psychic processes." The assumption of the erect attitude and acquisition of the power of speech are considered enormously important incidental manifestions of the brain development, which permitted sufficient cortical regulation of skilled movements.

In the second chapter is an interesting description of the various types of primitive man (the Java ape-man, the Pittdown dawn-man, the Heidelberg, Neanderthal, and Rhodesian men, and the earliest known varieties of *homo sapiens*). In the dawn of civilization, the invention of agriculture and the domestication of the dog and other animals are discussed. The third chapter, "The Human Brain," deals in greater detail with the development of the theory already given.

E. B. KRUMBHAAR, M.D.

MIND AND MEDICINE. By Thomas W. Salmon, M.D. 33 pp. New York, Columbia University Press, 1924.

The author of this most thoughtful little book, the contents of which were delivered as an address at the opening session of the College of Physicians and Surgeons, Columbia University in 1923, is well known as one of the most scientific and advanced psychiatrists in this country, and his studies on the neuroses which were the result of the World War have had most important practical results. Therefore whatever Dr. Salmon has to say on the relation of psychiatry to medicine demands attention. This address is really an appeal to the medical profession to give more attention to the mental aspects of disease or the mentality of their patients than they are ordinarily disposed to do. At the present day the physician or surgeon is so much absorbed in the wonderful progress that research has made in the physical and pathological study of morbid conditions that he is all too likely to have his consideration deflected from the mental status of the sick man and is thereby led to neglect an important factor in the case. We feel assured that every doctor, and we use the word advisedly, would find food for thought and valuable suggestions to put in practice in this delightful little book.

FRANCIS R. PACKARD, M.D.

PAUL EHRLICH ALS MENSCH UND ARBEITER. Erinnerungen aus dreizehn Jahren seines Lebens (1902–1915). Von Martha Marquardt, mit einer Einfuhrung von Dr. Richard Koch, Privat dozent für Geschichte der Medizin an der Universität Frankfurt a. M. 112 pp., 4 portraits and 2 facsimiles. Stuttgart, Berlin and Leipsic, Deutsche Verlag-Anstalt, 1924.

Far from attempting a complete biography of the celebrated investigator, this little book makes a much pleasanter appeal in presenting in an informal and charming manner, a series of anecdotes and side lights of character that make the man live again for the reader. To those who knew Ehrlich personally these recollections must give the same pleasure as the Osler Memorial Bulletin of the International Association of Medical Museums gives to the wide circle of that great humanist's friends; but even for the casual reader, there is much that a formal biography usually fails to offer. For the customary biographical details the reader can turn to the *Festschrift* of his sixtieth birthday[1] and to Lazarus' small biography.[2] The author of this work had the good fortune to be in daily contact with Ehrlich as his secretary for thirteen years and she was industrious in improving her opportunities.

The dynamic, forgetful, impatient investigator, subconsciously troubled by his errant cuffs or calling many times daily through the long halls of the Institute for Experimental Therapy for his *Faktotum*, Kadereit, lives again for the reader in these pages, "Slow progress in one direction was difficult for him, and yet his desire for accuracy was not satisfied by the most pedantic thoroughness." Kadereit's expressions: "When we came to Frankfurt," "When we discovered Salvarsan," indirectly throw a light on his influence on those who came in contact with him and their love for him.

Needing violent stimulants, he read chiefly detective stories, he smoked the strongest cigars, and he preferred the sweetest smelling flowers and the most vivid colors. Yet he had no taste for art and only the simpler and livelier forms of music appealed to him. Working memoranda for himself or his colleagues, which were according to Ehrlich his most important work of the day, often were forthcoming after the evening music played by his wife or the Patience hour that followed it.

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[1] Jena, Gustav Fischer, 1914.

[2] Rikola Verlag, 1922.

The pages are enlivened by numerous personal anecdotes, many amusing and all vivid. Among them is one of a reproof Ehrlich received from his wife during a visit to Baltimore, when she told him that he asked so many questions that the Americans would think him too inquisitive. Turning to Dr. Welch, he said: "Now my dear Welch do you think I am inquisitive," and was much amused at the answer: "Well, in scientific matters, somewhat." Many bring out his absentmindedness (or from the opposite point of view, his scientific concentration), and many show a schoolboy petulance, which though told here sympathetically must have been often very exasperating to his associates. Nevertheless this was more than counterbalanced by his idealism and impetuous sympathy, so that on his death from apoplexy in August, 1915, he was mourned as a scientist by the world at large, but still more as a man by his personal friends.

E. B. KRUMBHAAR, M.D.

DROGEN UND DROGENHANDEL IM ALTERTUM. By Dr. Phil. Alfred Schmidt, Mitglied der Kölner Handelskammer. 136 pp. and 8 illustrations. Leipsic, Johann Ambrosius Barth, 1924.

Although much information about the history of medicines and the drug trade in ancient times lies scattered in works on botany, chemistry, medicine and similar topics, the author states that no definite work on this subject has ever before appeared. This book, therefore, which is issued simultaneously as a Bonn dissertation, should prove both interesting to the casual reader and (though far from being exhaustive) a valuable reference book to students of ancient medicine. In the first half of its sixteen chapters are discussed such subjects as drugs in medicine, in the arts, in cosmetics, as poisons and as magic workers. In the last half, the drug trade is treated: its origin, how drugs are collected, preserved and sold, prices, customs, smuggling, monopolies and imitations. Copious footnote references, to authorities from Pliny and Dioscorides to Puschmann and Sudhoff, afford ample opportunity to those who wish to delve more deeply into the subject. A useful list of the reputed places of origin of certain drugs is given and the complete Mithridatic prescription for the celebrated Theriacus occupies two pages.

E. B. KRUMBHAAR, M.D.

Cum INDICE locupletiſsimo.

[From Franciscus Vallesius: Hippocrates, Coloniae, 1589]

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